PRINCIPLES OF
INLAND TRANSPORTATION

STUART DAGGETT

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PRINCIPLES OF INLAND TRANSPORTATION

BY

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PRINCIPLES OF INLAND TRANSPORTATION

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PREFACE

The author does not underestimate the difficulty of describing all major forms of transportation in the United States within the limits of a volume of moderate size. Yet he includes the automobile and the inland waterway and the tramway and the airplane, nevertheless, as well as the railroad, in his discussion, because he is persuaded that these different mechanisms of transport are so closely connected with one another in the common task of moving people and goods, that it is no longer possible to understand the activities of any one of them without being cognizant, in some degree, of the work of the others also. Nor is it even true that the underlying principles of transport still find their best expression in the field of any single agency.

Many interesting problems of price-fixing in the transportation world to-day are presented by the experience of the street railway companies; some of the most disputed calculations of cost relate to our rivers and canals; and the influence of transport upon settlement can be observed in connection with the tramway and the automobile at least as well as in connection with the railroad.

The obvious danger in extending the scope of a treatise upon transportation to cover several forms of machinery and organization, instead of only one, is that the resulting work may lack unity. The analysis may seem to be concerned with a variety of subjects, instead of with one subject under a variety of aspects. It may be that the present volume will produce such an effect. The author can only urge in his defense his belief in the essential unity in principle and in purpose of the different forms of transport, and his conviction that at the present moment more can be expected from an attempt to see the transport problem as a whole, than from continued preoccupation with its various parts.

The rest of the author's apology, if a preface is to be interpreted as an apology, must concern itself with quite another matter—namely, with the inclusion of a considerable amount of economic geography in a book devoted to transportation. It is true that the two subjects are linked together in treatises upon the principles of economics, but for many years the discussions of railroad economics, which constitute most of the recent study of the science of transportation, have concerned themselves primarily with those sides of the railroad question which have been discussed in national or

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state legislatures, or with problems of labor or finance which confront the railroad because it is a corporation or an employing agency, not because it is concerned with transport.

Now it is easy to understand why excellent books have been produced upon these aspects of the railroad question; but, upon the other hand, it is not unreasonable to observe that transport, in its essence, is neither corporation finance, nor big business, nor any other of a number of incidental things, but that, in the main, it is the process of moving articles and people along established routes between defined termini. If this is the fact, then it is proper that attention should be drawn both to the facilities which traffic uses and to the flow of traffic which carriers are organized to promote, as well as to the more traditional and publicly contentious questions with which legislators have been concerned. This is all that the present treatise seeks to do.

Most of the information offered to the reader has been drawn directly from official sources. The author is indebted to many people for courtesies extended in the course of the preparation of this work. He will not attempt to enumerate all the instances in which he has received friendly assistance, but he wishes to express his appreciation of the coöperation of the staffs of the Interstate Commerce Commission and of the Department of Commerce at Washington, and of the offices of the United States commercial *attachés* at London, Paris, and Berlin. It would have been difficult to complete the chapters upon the English, French, and German railways without the connections which the last-named offices were able to supply. Acknowledgment should at the same time be made of facilities provided by the Ministry of Transport in England, and by the Ministries of Public Works in France and in Germany, which have made possible convenient access to published and, in France, also to unpublished, material bearing upon the transportation problem in these countries.

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PRINCIPLES OF INLAND TRANSPORTATION

PRINCIPLES OF INLAND TRANSPORTATION

CHAPTER I

GENERAL SURVEY OF TRANSPORTATION FACILITIES

Introduction

This book has four purposes: the first is to present to the reader a picture of the transportation system of the United States; the second is to consider the character and direction of traffic which makes use of this transportation system; the third is to discuss a selected list of problems which concern, for the most part, the relations between transportation companies and shippers or between such companies and the general public; and the fourth is to trace the progress of legislation in England, France, Germany, and the United States, with special reference to railroads, but mentioning also statutes which control inland waterway, motor vehicle, and aircraft transportation.

Movements Involved in Transportation

It should be understood at the beginning that movements of freight or passengers in a modern community are for many different purposes and require a great variety of machinery. They include, for instance, the transportation of minerals or other raw material from the place of extraction or production to the furnace or factory; the carriage of crops from the farm to the local elevator, thence to the primary market and thence in one or more stages to the place of consumption; and the transfer of finished products from factory to wholesale warehouse, from wholesale warehouse to retail store and from retail store to consumer. Movements of these various sorts are sometimes for short distances and sometimes for long; they are sometimes in large consignments and sometimes in small; speed is necessary in some instances and not in others; in short, they demand a highly diversified equipment and a flexible organization in order to bring about the necessary displacement at a minimum of cost.

Elements in a Modern Transportation System

The principal elements of a transportation plant in a modern country are the following:

1. Inland waterways, including canals, improved or canalized rivers, and lakes;
2. A road system, in most cases constructed for the use of draft animals, but frequently reconstructed and enlarged for motor vehicles;
3. A railroad system;
4. Pipe lines, serving mostly, though not entirely, for the transportation of petroleum;
5. Interurban, suburban, and urban railways, generally driven by electric power;
6. Air routes with proper landing places.

This list does not exhaust the mechanical aids which man to-day employs for inland movements, but it does include the more important.

If, now, we examine the relative importance of these different forms of machinery and their location in the United States, we have the following details:

Inland Waterways

The earliest medium of communication to be developed in a country is apt to be its waterways, and this has been true of the United States.

The map upon the following page illustrates the principal developed waterways of the United States in the year 1923:

There are no comprehensive figures showing the length of improved waterways in the United States. The annual report of the Chief of Engineers, United States Army, gives, however, full information regarding the volume of traffic handled. From this report it appears that the principal inland waterway in this country is the Great Lakes. In 1923, the tonnage carried on the Great Lakes, after eliminating all known duplication, reached the total of 125,517,551 tons.[1]

Next to the Great Lakes came the Mississippi River and its tributaries, with 27,089,762 tons.[2]

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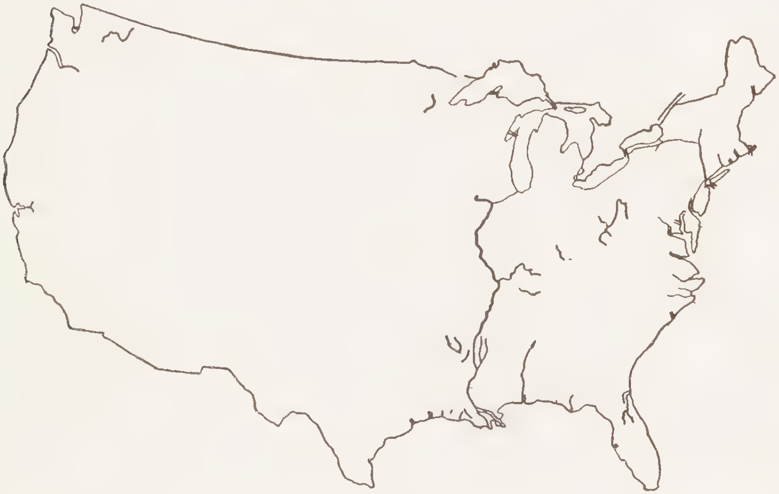
[1] United States Department of Engineers, Annual Report of Chief of Engineers, 1924, p. 3. The figure for 1924 was somewhat less, or 109,831,279.

[2] Engineer's Report, 1924, p. 4. The movement upon the Mississippi in 1924 exceeded that in 1923 by more than a million tons. The Engineer's Report for 1924

The balance of inland waterway tonnage amounted to 25,831,388 tons. It is difficult to distribute the tonnage in this last group because of the uncertain allowance to be made for duplication. Among the important waterways besides the Great Lakes and the Mississippi River may be mentioned the Hudson River, the New York Barge Canal, the Black Warrior, Warrior, and Tombigbee Rivers in Alabama, the Sacramento and San Joaquin Rivers in California, the Columbia, Willamette, and Snohomish Rivers in Oregon and Washington, and short sections of the Delaware, the Potomac, and the Taunton Rivers emptying into the Atlantic Ocean. The traffic upon all these streams is included in the 25,831,388 tons already mentioned.



═Completed channels over 12 feet deep at low water.
—Completed channels under 12 feet deep at low water.
PRINCIPAL WATERWAYS OF THE UNITED STATES, 1923[1]

Roads

The road system of the United States consists of 2,941,294 miles of roadway, a mileage so great that if it measured a single continuous road, that road would encircle the earth more than one hundred

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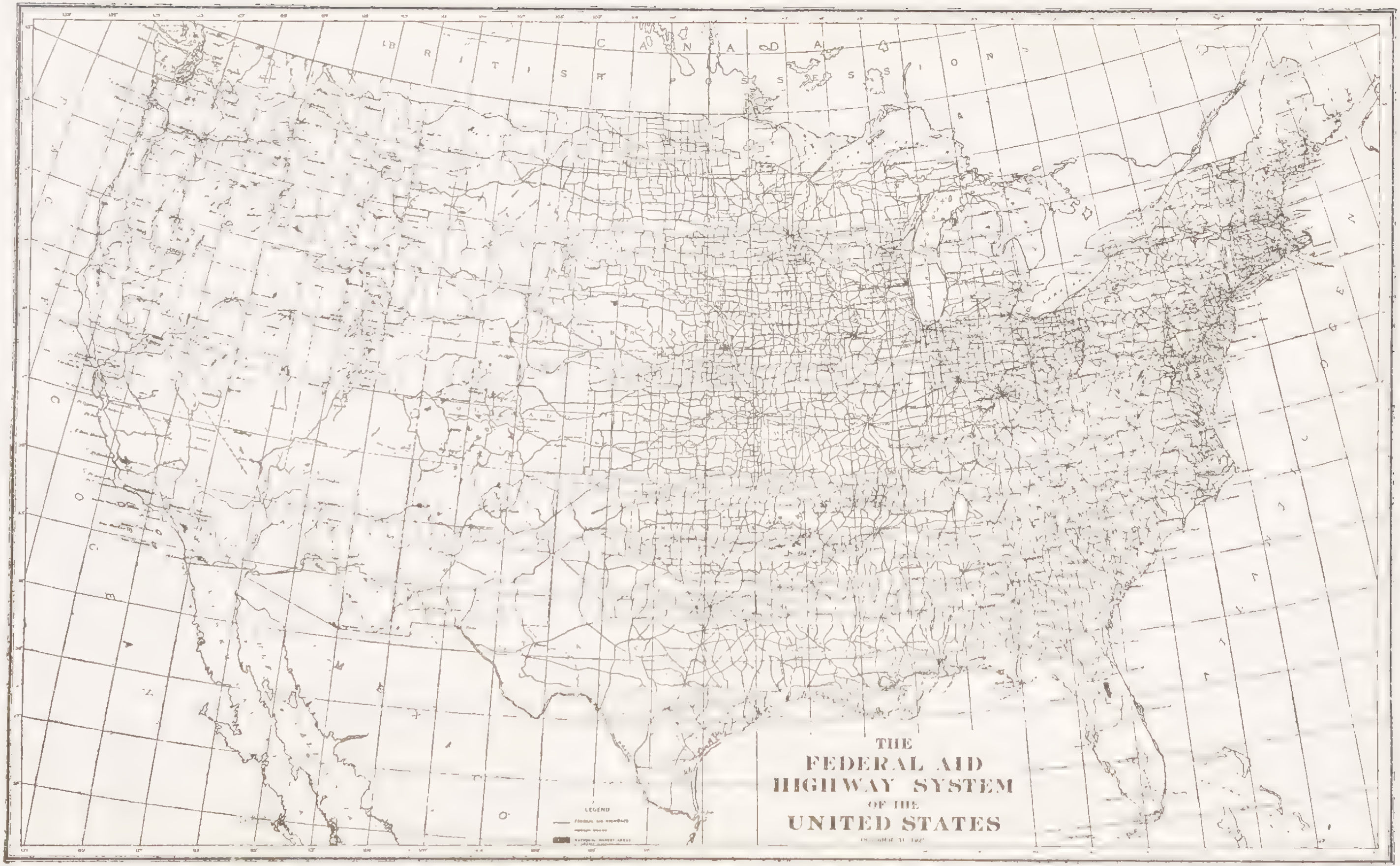
does not, however, eliminate duplications as it did in 1923, and so, for the purpose of summary statement, the statistics of 1923 are retained in the text.

[1] Department of Commerce, Bureau of Foreign and Domestic Commerce, Miscellaneous Series, "Inland Water Transportation in the United States," Bulletin No. 119, 1923.



Federal Aid Highway System of the United States times. The greater part of this mileage is, of course, local. The system includes, however, state highways measuring 251,056 miles (1922), almost as extensive as the steam railroad mileage of the country, and 387,760 miles of surfaced roads (1921).[1]

These two last-named categories are, of course, largely identical, but not altogether so. Most state highways are surfaced, but there is a large amount of country and city construction of a relatively permanent sort which state governments have never undertaken to finance.

The map on the preceding page indicates the principal highways of the United States.

There are no tonnage or passenger statistics of road traffic. Most highway travel, however, is by truck or automobile. In 1926 there were 19,237,171 passenger automobiles registered in the United States, and 2,764,222 trucks. A recently published survey of transportation upon the state highway system of Ohio affords some slight basis for a minimum estimate of 200 passengers per passenger car and 100 tons per motor truck annually in this country. When applied to statistic of registration these figures indicate a movement by motor car in the United States of almost four billion passengers and three hundred million tons of freight each year. The actual movement is certainly larger, but by how much it is impossible to say.

Pipe Lines

In addition to its inland waterways and highways, the United States possesses a considerable mileage of pipe lines, used almost exclusively for the movement of crude petroleum. The location of the principal pipe lines of the country is shown upon the following page.

The principal sources of oil are the Mid-Continent field, including oil pools in Kansas, Oklahoma, northern Texas, and northern Louisiana, and the California field in southern California. Oil is also found in Wyoming, near the Gulf Coast, in Indiana and Illinois, and in the Appalachians. Pipe lines connect these fields with refineries at tidewater or near large interior consuming markets. Recent reports of the United States Geological Survey indicate that there are now over 82,000 miles of oil pipe line in the United States, representing an investment of about $750,000,000.

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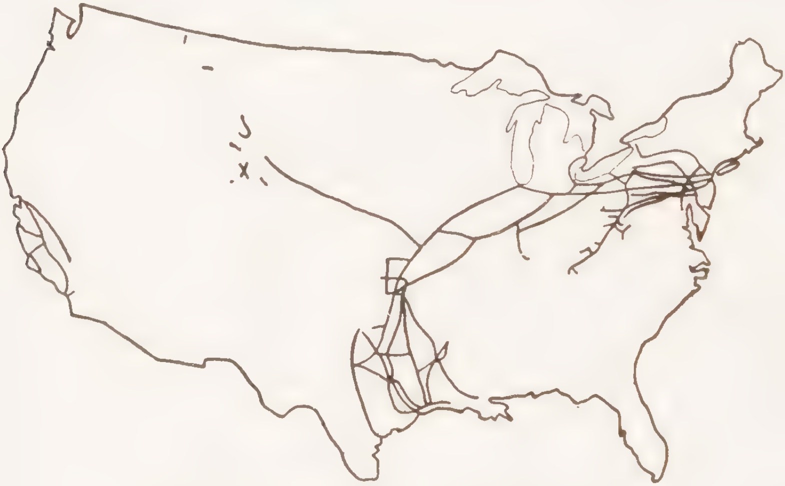
[1] United States Department of Agriculture, *Yearbook*, 1924, "Highways and Highway Transportation," by T. W. Allen and others, pp. 97 ff.

Pipe lines consist of steel pipes, laid on or near the surface of the ground, through which crude oil is forced by pumps operated by steam or internal-combustion engines. The main pump lines are generally eight inches in diameter, and the pumps are located about forty miles apart.

Practically all domestic crude petroleum is carried by pipe lines for a greater or shorter distance. The total production of the oil fields of the United States in 1925 was 755,852,000 barrels of approximately 310 pounds each, or in the neighborhood of 117,157,060 tons of 2,000 pounds each. There are no reliable figures showing average length of haul, but the longer pipe lines run for distances as great as 600 or 700 miles.[2]



Crude Oil Pipe Lines of the United States [1]

Railroads

The railroads of a country constitute the major portion of its facilities for inland transportation.

The United States railway system on December 31, 1924, comprised the following mileage: [3]

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[1] C. E. Bowles, *The Oil and Gas Journal*, July 31, 1924.

[2] United States Department of Commerce, Bureau of Mines, Petroleum Statistics 1925; G. R. Hopkins, *Petroleum Economist*, February 10, 1926.

[3] Interstate Commerce Commission, 38th Annual Report on the Statistics of Railways in the United States for the year ending December 31, 1924.

Class I carriers	Eastern	Southern	Western	Total
Number of roads	64	35	76	175
Lines owned	33,610	35,506	109,120	178,236
Lines operated	59,284	43,824	132,786	235,894
All carriers				
Number of roads	668	405	605	1,678
Lines owned	59,769	50,362	140,024	250,155
Lines operated	64,677	51,740	145,741	262,158

Carriers are divided by the Interstate Commerce Commission for statistical purposes into three classes, based on the amount of their annual operating revenues: Class I, including companies with revenues above $1,000,000; Class II, companies with revenues from $100,000 to $1,000,000; and Class III, companies with revenues below $100,000. The mileage operated by Class I carriers comprises 89 per cent of all the mileage in the country. The Class I companies, moreover, control all of the principal routes and are responsible for 99 per cent of the ton and passenger mileage. For all practical purposes the 1,503 carriers with revenues below $1,000,000 may be disregarded in discussing the railroad systems of the United States, and attention concentrated upon the 175 larger organizations. Figures in the chapter relating to American railroads will accordingly be understood as limited to Class I carriers unless otherwise specified.

Comparison with Foreign Railroads

According to the German *Archiv für Eisenbahnwesen,*[1] which is perhaps our most reliable source of information on international railway statistics, the railway mileage of the principal countries of the world stood in 1923, the last year on which figures are available, as follows:

Country	Railway mileage	Railway mileage per 100 sq. mi. of territory	Railway mileage per 10,000 inhabitants
United States	251,163	6.93	25.12
British East Indies	40,491	2.21	1.27
Canada	39,862	1.07	45.36
Germany	35,818	19.65	5.98
Russia in Europe	35,027	2.43	5.20
France	33,282	15.64	8.47
Australia	26,356	0.89	22.21
Great Britain	24,397	25.69	5.48
Argentina	23,156	2.01	24.25
Brazil	18,704	0.57	6.11
Mexico	16,443	2.16	11.55
Italy	12,840	10.73	3.31

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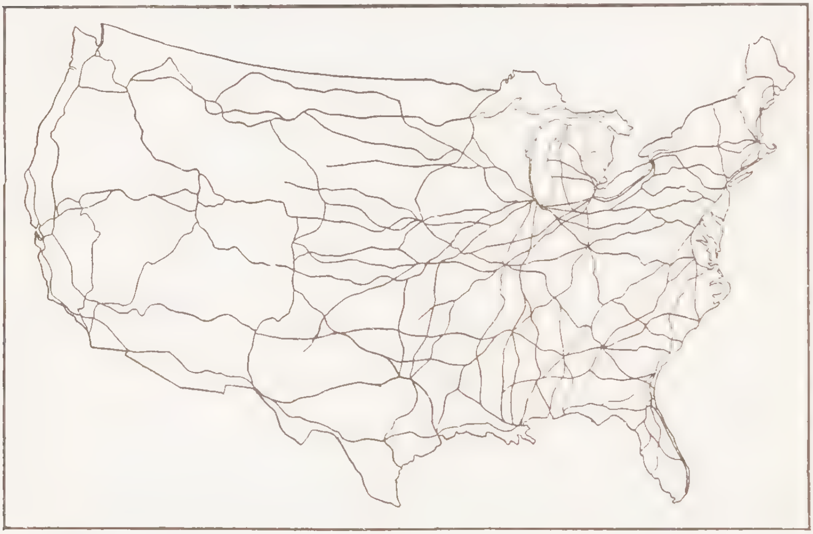
[1] *Archiv für Eisenbahnwesen,* vol. 48, pp. 859–863, 1925.

It will be noticed that the figures given by the *Archiv* for the United States differ slightly from those reported by the Interstate Commerce Commission, but the difference is so slight as to be negligible. The striking fact is that the mileage of railroads in the United States amounts to 33 per cent of that reported for all the countries of the world. The size of the United States railway net is of course due to the great distances to be traversed in this country, as well as to the abundance of capital available for investment and to a farsighted readiness to spend money on improved forms of transportation. It should be observed, however, that the railway mileage per 100 square miles of country served is less in the United States, in spite of the impressive aggregate, than in the more thickly settled countries of Great Britain, Germany, and France. On the other hand, in relation to population, the United States is better supplied than Europe, taking its place, on the whole, with certain other countries of large area and moderate density of population such as Australia and the Argentine Republic.



PRINCIPAL RAILROAD ROUTES OF THE UNITED STATES

In 1924, the railroads of the United States carried 932,678,462 passengers and 1,187,295,744 tons of freight. This is a smaller number of passengers than was handled during the same period by automobiles or by street and interurban railways, but a considerably greater volume of freight. Indeed, the disproportion in the freight business is so great that it is permissible to consider freight movements, apart from terminal handlings, as essentially rail movements, and to treat the activity of all other forms of transportation as subsidiary in this respect.

The full statistical reports which our railroads are required to make to the Interstate Commerce Commission make it possible to analyze their traffic in great detail. We shall content ourselves at this point, however, with indicating the principal railroad lines which are now in operation.

The map reproduced on preceding page does not attempt to set forth the entire rail mileage of the United States. It does, however, indicate the more important lines, and shows the direction and points of concentration of the railroad routes of this country.

Interurban, Suburban, and Urban Railways

The Census of Electrical Industries, taken in 1922, reported a single-track mileage of street railways of 43,932 miles. In the same year the single-track mileage of steam railroads in the United States was 409,359 miles. Taking the other features of the business into account, we may say generally that the street and interurban railways of the country now operate about one-tenth as large a mileage as do our steam roads, employ one-sixth as many people, earn one-fifth as much revenue, have one-fourth as large a capitalization, and, in the field of passenger service, own more cars and carry more people. The number of persons traveling upon street and interurban cars in 1922 exceeded, indeed, 15 billion. In the freight field, the work of the street railroad is unimportant, but even if we make allowance for this and also for the short distance that the street railroad passenger travels as compared with the average haul upon steam railroad lines, it is evident that we have in this form of organization a notable supplement to the country's transportation facilities.

According to the same census of 1922, 17,808 out of 43,932 miles, or 41 per cent, of electric railway track was classified as interurban. More than half of the total interurban mileage of the country, or 10,373 out of 17,808 miles, is located in the tier of states north of the Ohio River and east of the Mississippi. In these states the population is dense and the cities near together. Conditions, therefore, permit a return upon the large investment required to operate roads driven by electric power.

Air Routes

Air service in the United States is still a negligible factor as a carrier of either freight or passengers, although its possibilities are not to be overlooked. In 1926 air lines in the United States transported 405 tons of mail, 867 tons of express matter, and 5,872 passengers. Quantitatively this service is unimportant, as has just been said.

Conclusion

It is hoped that the enumeration in the present chapter will give the reader some initial conception of the size and relative importance of the principal transportation agencies in daily use in the United States. Few people visualize the extent of modern transportation facilities, and probably still fewer have their attention called to facilities which are not related to rail transportation. The railroad is and will long be our principal inland carrier of freight, but it is no longer our chief carrier of passengers, and its work is supplemented even in the movement of freight by other kinds of machinery of no mean importance.

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CHAPTER II

INLAND WATERWAYS

Relatively Slight Development of Inland Waterways in the United States

The United States possesses in the Great Lakes an inland water route unrivaled elsewhere in the world. On the other hand, river and canal transportation is relatively less important in this country than in some parts of Europe. There are several reasons for this comparatively slight utilization of so large a part of the system of American inland waterways. One fact of some significance is that the Mississippi River and the canals dependent upon it run across the main currents of traffic rather than parallel with them, as does, for instance, the German Rhine. American waterways have also suffered from lack of government support, from hostility of the railroads, and from the fact that rail carriers in this country have offered shippers quicker and cheaper service than could be obtained from improved rivers or from canals.

Importance of the Great Lakes, the Mississippi River, and the New York Canals

In proceeding to discuss water transportation in the United States, we may neglect the lower reaches of rivers which empty into the Atlantic Ocean, that serve rather as extensions of ocean routes than as means of communication between inland points. We may pass over also the traffic upon the rivers of the Pacific coast, but we must consider the Great Lakes and the St. Lawrence River, the Mississippi River and its tributaries, and certain Eastern canals, especially those in New York State. Indeed, these three systems so far surpass all others in importance that it is permissible to limit our discussion to them alone.

Early Navigation Upon the Mississippi

Historically the Mississippi River has supplied a threefold service. In the first place, it has provided a means for long-distance transportation in a territory devoid of roads and remote from the sea. Secondly, the river has linked Northern and Southern settlements which on the extremes early developed differing products that tempted to exchange. Thirdly, it has provided an east-and-west water route through its Ohio and Missouri River branches which was useful to the westward moving pioneer. These three characteristics lent the Mississippi great importance during the first half of the nineteenth century.

Up to 1817, the principal crafts used on Western rivers were the flatboat, the ark, and the raft for downstream, and the keel boat or barge for upstream, navigation.[1]

Steam navigation upon the Mississippi began with the steamboat *Enterprise,* which left Pittsburgh in September, 1811, and reached New Orleans in January, 1812. Regular steam service is usually dated, however, from 1817, when the steamboat *Washington* made the trip from Louisville to New Orleans and return in forty-one days, the voyage upstream consuming twenty-five days.[2] Thereafter the steamer rapidly displaced the keel boat and the barge, although the flatboat continued to be used until the Civil War.

From the 'fifties until the early 'eighties, steamboat transportation on the lower Mississippi was the chief agency upon which the people of the Mississippi Valley depended for the carriage of freight and passengers. Through boat lines connected Cincinnati, Louisville, and St. Louis with New Orleans, while there was an equally important trade from Memphis, Greenville and Vicksburg to New Orleans, and branch services which ran up the Red, Arkansas, White, Oachita, Yazoo, and other streams.[3]

Likewise upon the Ohio and its tributaries, the Cumberland, Tennessee, and Monongahela Rivers, and to a less degree upon the upper Mississippi, an extensive commerce was carried on.

Diversion of River Traffic to the Railroads

The decline in the importance of the Mississippi began, however, even before the Civil War, with the diversion of increasing proportions of produce from the northern part of the Mississippi Valley to the east-and-west route to the Atlantic seaboard. This diversion began, as we shall see, with the construction of the Erie Canal, and gained momentum as railroad construction developed between St. Louis and Chicago and the East. During the years 1854-1858, Western produce represented but 18 per cent of the total receipts at New Orleans, as compared with 61 per cent in the early days of river commerce.[1]

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[1] For further details consult Ringwalt, *Development of Transportation Systems in the United States*, 1888; Meyer, *History of Transportation in the United States before 1860*, Washington, 1917; and Dixon, *Traffic History of the Mississippi River System*, Washington, 1909.

[2] Dixon, *Traffic History of the Mississippi River System*, pp. 12–13.

[3] Preliminary Report of the Inland Waterways Commission, p. 133.

Naturally, as the grain-producing areas moved west and north, the strategic position of the railroads improved, as the river boats could not follow the farms, and transshipment of grain to the waterway from the railroad car which took it at the elevator involved additional expense.

Effect of Changes in Producing Areas in the South

This same change occurred in the South, where traffic left the river for the rail. The following table shows the receipts of cotton at New Orleans from 1873 to 1907.

RECEIPTS OF COTTON AT NEW ORLEANS [2]

Year	Receipts by rail (Bales)	Receipts by river (Bales)	Percentage by river
1873	438,495	968,877	68.8
1875	406,076	750,080	64.8
1880	627,577	1,087,522	63.4
1885	1,018,261	680,376	40.1
1890	1,722,473	425,828	19.8
1899	1,935,177	343,450	15.1
1904	1,833,755	192,842	9.5
1907	2,082,053	231,381	10.0

The decline in the percentage of river receipts of cotton at New Orleans from 68.8 per cent in 1873 to 40 per cent in 1885 and 9.5 per cent in 1904 was due in part to direct competition of parallel railroads and in part to a change in the location of cotton-producing areas analogous in effect to the changes in the location of grain districts which has just been mentioned.

In direct competition with the railroads the river was under serious handicaps from early days. Generally speaking, river transportation was slow, subject to interruption on the upper reaches from ice, handicapped by floods, droughts, and variations in depth in different sections, poorly organized, and poorly equipped with terminal facilities. Moreover, the railroads refused to quote through rates with the water lines, and so compelled most shippers to pay local charges from and to the river as a condition of utilizing the water service.[3]

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[1] Dixon, *Traffic History of the Mississippi River System*, p. 33.

[2] Dixon, *Traffic History of the Mississippi River System*, p. 59.

[3] Dixon, *sup. cit.*, pp. 64–70. See also Memphis Southwestern Investigation, 55 I. C. C. 515, 563, 1919; Chattanooga Packet Co. *v.* I. C. R. R. Co., 33 I. C. C. 384, 1915; Kansas City Missouri River Navigation Co. *v.* C. & O. Ry., 34 I. C. C. 67, 1915.

Transportation Upon the Mississippi During the World War

For at least twenty years prior to 1917 there was no common carriage of consequence upon the lower Mississippi. During the acute traffic conditions in the Mississippi Valley in the winter of 1917, the commercial interests of New Orleans, Louisiana, and St. Louis, Missouri, undertook the formation and financing of a corporation to build towboats and barges for operation between St. Louis and New Orleans. Due to war conditions, they were unable to secure the steel necessary for the purpose. After the passage of the Federal Control Act in 1918, an appeal was made under the provisions of Section 6, which authorized the President to

> "expend such an amount as he may deem necessary or desirable for the utilization and operation of canals, or for the purchase, construction, or utilization and operation of boats, barges, tugs, and other transportation facilities on the inland, canal, and coastwise waterways. . . ."

A committee appointed by the Director General of Railroads to investigate and report, recommended the utilization of the lower Mississippi River and of the so-called Warrior River waterway. The utilization of the latter was to provide service between Alabama coal and ore districts and the ports of Mobile, Alabama, and New Orleans. Both projects were authorized in modified form in June, 1918. In the following month a federal manager was appointed and instructed to commandeer and put in operation as soon as possible all available equipment on both waterways capable of being used for the transportation of freight, and also to proceed with the construction of a new fleet authorized by the Director General.[1]

Inland Waterways Corporation

On termination of federal control, the government facilities upon the Mississippi and Warrior Rivers were transferred to the Secretary of War, and in 1924, Congress authorized the Secretary to incorporate the "Inland Waterways Corporation" for their administration. The capital stock of the new corporation was set at a maximum of $5,000,000, all to be subscribed by the United States.[2]

Real property and equipment held by the Secretary of War were

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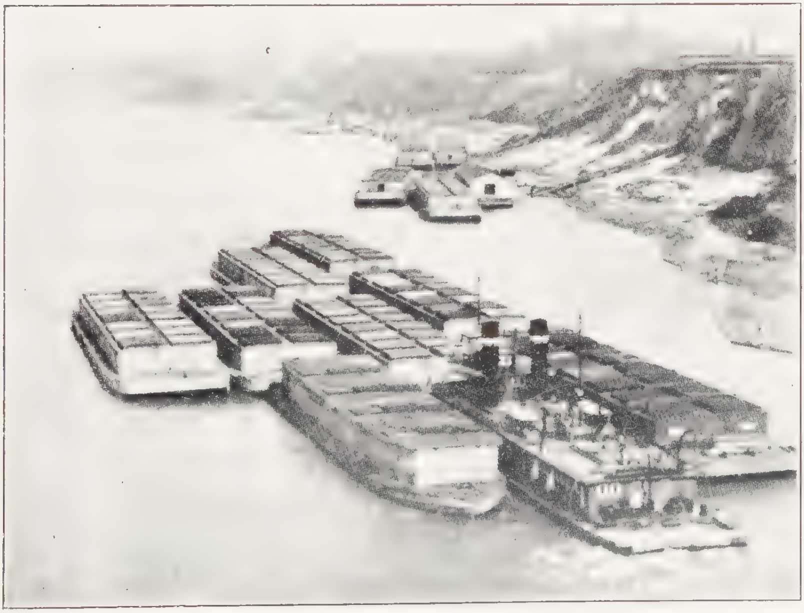
[1] United States War Department *v.* Abilene & Southern Railway Company *et al.*, 77 I. C. C. 317, 1923.

[2] *Waterways and Inland Seaports*, by Brigadier-General T. Q. Ashburn, U. S. A., p. 30, Washington, 1925.

A Fast Packet Boat Leaving New Orleans Harbor



A Recent Tow of Some 15,000 Tons of Merchandise upon the Mississippi River

turned over to the Inland Waterways Corporation, and the corporation was given power to borrow money. This, with $1,500,000 of capital stock (out of $5,000,000 authorized) actually issued to the United States Government and paid for, provided the corporation with total net assets of $11,548,278.59, as of December 31, 1925, with which it is operating at the present time.[1]

The Mississippi River service is between St. Louis and New Orleans, and the barges also touch at East St. Louis and Cairo, Illinois, Memphis, Tennessee, and Vicksburg, Mississippi. The barge line makes no attempt to serve the smaller river landings.

The Warrior River service is between Cordova and Birmingport, Alabama, on the Black Warrior River, and New Orleans, Mobile, and the intermediate river ports of Demopolis and Tuscaloosa, Alabama. The route is down the Black Warrior and the Warrior to the Tombigbee, thence to the Alabama River, thence into the Mobile River, Mobile Bay, Mississippi Sound, Lake Borgne, and through the Lake Borgne Canal to the Mississippi River and New Orleans harbor.[2]

Extent of Service

The sum at the disposal of the Inland Waterways Corporation is not large, but it has enabled the corporation to establish a towboat service between St. Louis and New Orleans leaving both termini every six days, and a fast packet service between the same termini every week. The advertised time for the tows between Cairo and New Orleans is ten days downstream and twenty days upstream, with from twenty-four to forty-eight hours additional for the stretch between Cairo and St. Louis. The packet service makes a sixth-morning delivery from St. Louis to New Orleans, and a tenth-morning delivery from New Orleans to St. Louis. Connection is made with rail lines at St. Louis and with steamships at New Orleans. There is no scheduled service upon the Warrior River, but traffic is handled as offered, with customary time of three days southbound and six days northbound between Mobile and Birmingport.

Volume of Traffic

The tonnage handled by the government lines upon the Mississippi and Warrior Rivers since 1921 has been as follows:

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[1] Annual Report of the Inland Waterways Corporation, 1925.

[2] United States War Department *v.* Abilene & Southern Ry. Co. *et al.*, 77 I. C. C. 317, 320, 1923.

TONS HANDLED BY MISSISSIPPI-WARRIOR SERVICE [1]

Year	Mississippi Division (Tons of 2,000 lbs.)	Warrior Division (Tons of 2,000 lbs.)
1921	443,267	228,844
1922	599,669	260,344
1923	710,431	269,341
1924	849,503	222,345
1925	910,755	231,464

The principal commodities transported upon the Warrior River are coal, steel, and iron products, and manganese ore. On the Mississippi the cargoes are much more varied, but the largest tonnage is in grain, bauxite ore, sugar, iron and iron products, and cotton.

Financial Results

The Warrior Division has never yet met its operating expenses, and there is some controversy regarding the financial outcome of the government services upon the Mississippi. The report of the Inland Waterways Corporation for 1925 shows a gross operating revenue of $3,542,444.81 and a net income of $268,855.28 after allowance for depreciation. This makes no allowance, however, for interest on the money advanced to the corporation by the United States, none for government expenditures in maintaining the navigability of the Mississippi, and none for the taxes which would be assessed upon a private corporation. The enterprise can hardly, therefore, be yet said to be upon a paying basis, although it has strengthened its position year by year and may in the end achieve results which will enable the government to sell the service to private parties.

Lakes-to-the-Gulf Deep Waterway

Whatever the outcome may prove to be, the success or failure of the Mississippi-Warrior experiment will have more than usual significance, because of its bearing upon future developments of waterways in the Mississippi Valley.

Mr. Hoover, for instance, visualizes the main trunk lines of the Mississippi River system as made up of a north-south trunk line 1,500 miles in length reaching from New Orleans to Chicago and there connecting with the Great Lakes system, and crossing this, a great east-west trunk line 1,600 miles in length, from above Pittsburgh through Cairo to Kansas City. The addition of feeding lines on the upper reaches and tributaries of the Mississippi, the Ohio, and the Missouri Rivers would produce, as Hoover sees it, 9,000 miles of connected waterways.[1]

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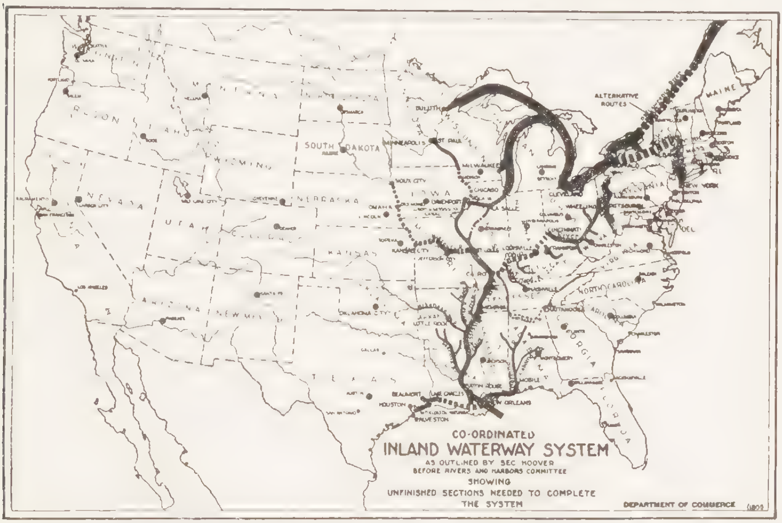
[1] Annual Report of the Inland Waterways Corporation, 1925.

A more limited proposal is to establish a channel of at least nine feet from Chicago to New Orleans. The route would be by way of the Chicago River, the Chicago Sanitary and Ship Canal, the Des Plaines River, the Illinois River, and the Mississippi. There is already a connected waterway over this route, but by no means one with the requisite depth.



A Co-ordinated System of Inland Waterways

According to the report of the Chief of Engineers for 1925, the controlling depths on the various reaches of canals and rivers involved are as follows:

Waterway	Controlling depth (Feet)
Chicago River	21
Chicago Sanitary Canal	21
Illinois and Michigan Canal	3½
Illinois River, LaSalle to Mississippi River	6
Mississippi River, Illinois River to Missouri River	5
Mississippi River, Missouri River to Cairo	8
Cairo to Vicksburg	9
Vicksburg to Baton Rouge	11
Baton Rouge to New Orleans	35
New Orleans to Gulf	35

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[1] *Traffic World*, October 24, 1925.

It is evident that enlargement of the Illinois and Michigan Canal, together with an increase in the depth by three or four feet of the waterway between St. Louis and the upper part of the Illinois River, with a still smaller deepening of the Mississippi between St. Louis and Cairo, would provide the nine-foot channel which is desired.

At the present time the State of Illinois is proceeding to canalize the Des Plaines and Illinois Rivers so as to connect the Chicago Drainage Canal at Lockport with the navigable waters of the Illinois River near Utica, a distance of sixty miles. The project includes the construction of five locks with a total lift of 126 feet, of which one is completed and two others are under contract. The estimated cost is about $19,000,000, of which $3,500,000 has been spent. From Utica to Cairo the responsibility of establishing and maintaining a nine-foot channel falls upon the national government. The estimated cost of $1,350,000 will be met through the federal Rivers and Harbors Bill.

Channels Around River Obstructions

The use of the Western rivers represents on the whole the utilization of a natural resource. The building of canals both east and west of the Alleghenies was a development of a different type. This phase of waterway development produced artificial works of several distinct types.

The first canal construction in the United States consisted of short channels around the falls of rivers. Such was the canal on the James River in Virginia, between Richmond and Westham, authorized in 1785. Such also was the canal on the Merrimac, near Pawtucket, Rhode Island, opened in 1797,[1] and that on the Ohio between Louisville and Shippingport, Kentucky, completed in 1830.[2] Canals of this description are of the most obvious utility and offer an excellent prospect of quick financial return.

Connection of Adjacent Natural Waterways

Next in order to short détours around obstructions in navigable streams come projects for the connection of adjacent natural waterways. Canals for this purpose are usually longer and more expensive than projects on a single stream, although they too, when properly planned, are very useful. Illustrations of this type of improvement in the United States are the Middlesex Canal, connecting the Merrimac and Charles Rivers in Massachusetts, opened in 1804; the Union Canal, 77 miles long, designed to furnish a channel between the Schuylkill River, near Reading, Pennsylvania, and Middletown, on the Susquehanna, completed in 1827; and the Chesapeake and Delaware Canal, connecting the waters of Chesapeake and Delaware Bays, completed in 1830.[1]

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[1] Ringwalt, *Development of Transportation Systems in the United States*, p. 41.

[2] Dixon, *sup. cit.*, p. 18.

Linking of River Systems

Still a third type of canal is that which seeks to join two great systems of waterways, as, for example, the American rivers emptying into the Atlantic Ocean with the Great Lakes or with the Mississippi River and its tributaries. Gallatin's report of 1808 urged, for instance, that a canal be built connecting the Mohawk River in New York with Lake Ontario, which would have provided a continuous waterway between the Great Lakes and the Hudson River,[2] and the later Windom Committee Report of 1872, rendered like Gallatin's report to the United States Senate, not only indorsed the project for a water connection between the Hudson and Lake Ontario, but proposed: (1) a connection by canal or by a freight railway from the Ohio or Kanawha River through West Virginia to tidewater in Virginia; and (2) a communication by canal or freight railway from some convenient point on the Tennessee River in Alabama or Tennessee by the shortest and most practicable route to the Atlantic Ocean.[3]

The reason why so little was accomplished during the early decades of the nineteenth century in the way of waterway connection between the Atlantic seaboard and the Mississippi Valley was that the Appalachian Mountains lay athwart all routes except one, and that the cost of lock construction over the mountains was prohibitive. The result was that except in New York State the most ambitious projects stopped at the mountains on either side, leaving the intermediate transit to be accomplished by road or by rail.

Pennsylvania State Works

Among the proposals, nevertheless, which had as an important purpose the improvement of transportation facilities between the

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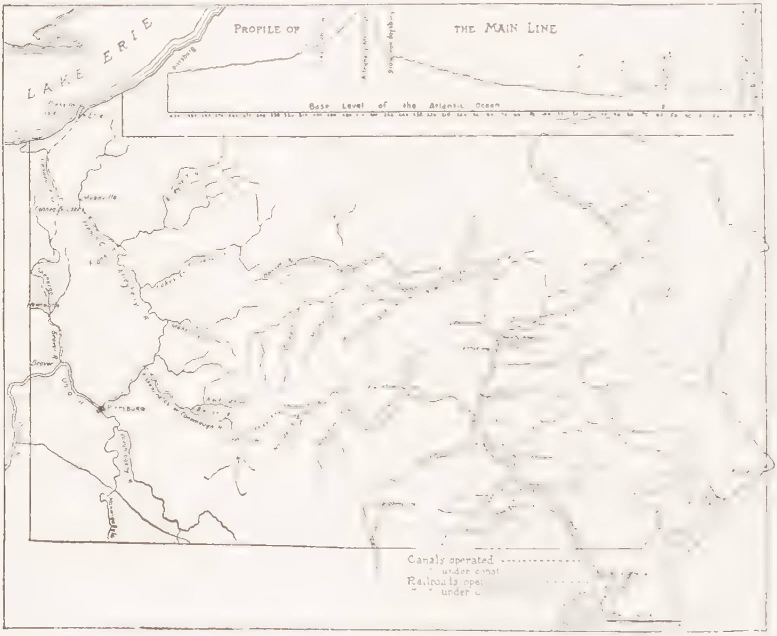
[1] Meyer, *History of Transportation in the United States before 1860*, Chaps. v, vii.

[2] Meyer, *sup. cit.*, pp. 135–136.

[3] Report of the Inland Waterways Commission, 1908, p. 587.

Atlantic coast and the interior, at least passing mention should be made of three.

The Pennsylvania State Works were authorized by Act of the State Legislature of Pennsylvania in February, 1826, and were opened in March, 1834. They were designed to afford a connection between the city of Philadelphia and the West comparable with that which New York enjoyed by use of the Hudson River and the Erie Canal.



MAP SHOWING LOCATION OF THE PENNSYLVANIA STATE WORKS[1]

As finally constructed the Works were composed of four sections:

1. The Philadelphia and Columbia Railroad. This line commenced at the intersection of Vine and Broad Streets, Philadelphia, and terminated at Columbia on the Susquehanna, a distance of 81.6 miles.

2. The Eastern and Juniata divisions of the Pennsylvania Canal, extending from Columbia to Hollidaysburg, a distance of 172 miles.

3. The Allegheny Portage Railroad. This railroad began at Hollidaysburg, rose 1,398.71 feet in 10.1 miles by means of inclined

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[1] BISHOP, *State Works of Pennsylvania*. REPRODUCED BY PERMISSION OF THE CONNECTICUT ACADEMY OF ARTS AND SCIENCES.

planes, crossed the summit of the mountains, and then, by the use of inclined planes upon the western side, descended to Johnstown, Pennsylvania. The total distance was 36.69 miles.

4. The western division of the Pennsylvania Canal from Johnstown through Pittsburgh to the Monongahela River, a distance of 104 miles.[1]

The entire distance between Philadelphia and Pittsburgh by the main line was 394.54 miles. The canals were 4 feet deep, 28 feet wide at the bottom, and 40 feet wide at the water line. The locks were 90 feet long and from 15 to 17 feet wide. The Pennsylvania State Works have attracted rather more attention from historians than they deserve, probably because of the ambitious nature of the project and its complete failure as a competitor to the railroad, and also because the Works afford useful evidence of the interest of seaboard cities in trans-Appalachian trade at the time when they were built. Of more permanent importance than this Philadelphia experiment were two other undertakings, one connected with the Potomac at Georgetown near Washington, D. C., and the other with Albany on the Hudson.

Chesapeake and Ohio Canal Company

The Potomac Canal Company was organized in 1786 to open the channel of the Potomac to Cumberland and to join Cumberland with the Ohio by means of a road. In 1823, when the Erie Canal was approaching completion, the plans for improvement of the Potomac were replaced by plans for canal connection with the Ohio. The route recommended was to leave the Potomac at its mouth and to reach the Ohio at Pittsburgh by way of the Youghiogheny and Monongahela Rivers.

This ambitious project was never accomplished, but a canal was built from Georgetown, near Washington, to Cumberland on the Potomac, under the direction of the Chesapeake and Ohio Canal Company. This canal was begun in 1828 and completed to Cumberland in 1851. It is still in operation, mostly for the transportation of coal.[2]

Erie Canal

There is no question but that the Erie Canal represents the most important piece of interior waterway engineering undertaken in the

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[1] Bishop, *State Works of Pennsylvania.*

[2] Hulbert, *Historic Highways.* vol. xiii; Ringwalt, *sup. cit.*, p. 43.

United States before 1855. It ran from Albany on the Hudson to Buffalo on Lake Erie, and therefore falls within the class of improvements designed to connect river systems emptying into the Atlantic with the Great Lakes.

The great natural advantages which the Erie Canal enjoyed from an engineering point of view were, first, that its route lay through the only continuous gap in the Appalachian range between Maine and Georgia, and second, that central New York State, through which the canal passed, was well supplied with lakes and rivers which could either be used directly or which served as sources of water supply.

These advantages made the construction of the Erie Canal possible. What made it profitable was the fact that it opened on the west upon a splendid natural highway—the Great Lakes, and that it was able to draw to itself the trade of western New York, northwestern Pennsylvania, Ohio, and Indiana, through the lake system and subsidiary canals which were presently built between the Lakes and the Ohio River. Like the Mississippi River, the Erie Canal route joined together two occupationally distinct territories. On the east lay the industrial seaboard, on the west the agricultural states of the Northern Mississippi Valley. The two districts were complementary one to the other and exchanged products readily as soon as facilities were built.

Dimensions, Cost, Etc.

The formal beginning of the Erie Canal took the form of an Act of the Legislature of the State of New York, dated April 15, 1817, authorizing the construction of canals between the Mohawk and Seneca Rivers, and between Lake Champlain and the Hudson River. This bill passed the State Assembly by 51 to 40 votes, and the Senate by 18 to 9. It deserves to be recorded that all the representatives of the City of New York in either house voted against it.

Actual excavation commenced at Rome on July 4, 1817; on October 26, 1825, the first boat passed through from Lake Erie to the Hudson, and in November, 1825, the completion of the canal was celebrated in New York City.[1]

The original dimensions were as follows:

Width at surface	40 feet
Width at bottom	28 "
Depth of water	4 "

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[1] Report of Inland Waterways Commission, 1908, p. 215.

Lockage	675½ feet
Number of locks	83
Size of locks	90 x 15 "
Burden of boats	
Average	70 tons
Maximum	76 "

The estimated cost of the canal was $4,926,738, and the actual cost $7,143,789. Between 1836 and 1862, the Erie Canal was enlarged at a cost of $44,465,414 to take boats of 240 tons capacity with a draft of 6 feet—the depth of the canal being increased to 7 feet, the width at surface to 70 feet, and the width at bottom to 56 feet.[1]

In 1903 the people of New York State authorized a further enlargement to a minimum depth of 12 feet, a width at surface of 123 feet, and a width at bottom of 75 feet. This is as deep a channel as the minimum ruling depth upon the Hudson River between Hudson and Waterford (11 feet). Present locks are designed to pass a self-propelled barge of 1,500 tons with a towed barge of equal capacity. The estimated cost of the improvement of 1903 was $101,000,000, but the actual expense to and including 1924 was $230,881,000. Work was begun in 1905, and the enlarged canal opened to traffic in 1918.

New York Barge Canal

The Erie Canal is now known as the New York Barge Canal. Its route is indicated upon the map on page 24.

While the present route of the Barge Canal differs in detail from that of the original Erie Canal, examination of the map will show that the differences are of a minor character. Perhaps the most interesting change consists of the abandonment of most of the branches which were originally intended to extend the influence of the canal to the southern borders of New York State. The branch north from Rome, also, though not formally abandoned, is not in a condition to serve any useful purpose.[2]

What is left is a main line from the Hudson River to Lake Erie, with side routes to Oswego on Lake Ontario, to Whitehall on the way to Lake Champlain, and to Lakes Cayuga and Seneca, a total length of approximately 450 miles.

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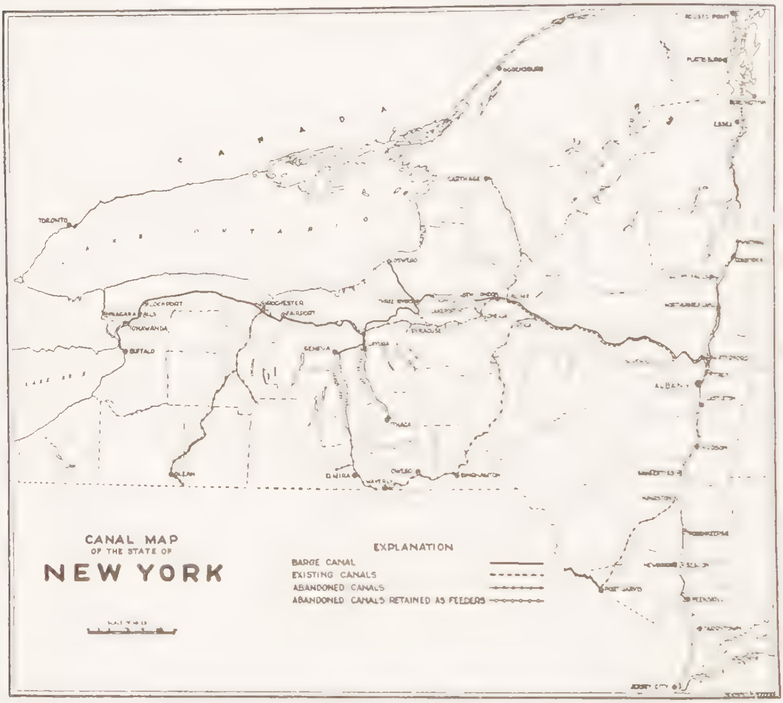
[1] *Ibid*, p. 211. Figures cited in the text refer to the main Erie Canal, and not to its various branches.

[2] Annual Report of the Department of Public Works, State of New York, 1924, p. 20.

Business of the Erie Canal

Under present conditions the Erie or Barge Canal is of secondary importance, but it deserves recognition as a factor in the economic history of the United States at least as late as 1873. In its early years it provided the only inexpensive means for freight carriage between the Atlantic seaboard and the Great Lakes.



Canal Map of the State of New York[1]

McMaster's *History of the United States* describes the traffic on the Erie Canal shortly after its completion as follows:

> "Three horses, walking one before the other, dragged the boat four miles an hour, and by dint of relays every eight miles Utica was reached in just twenty-four hours. . . . At the end of the fourth day from Schenectady the jaded traveller reached Buffalo, three hundred and sixty-three miles by canal from Albany. . . . Fifty boats starting westward from Albany day after day was no uncommon sight. During 1826 nineteen

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[1] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Inland Water Transportation in the United States*, 1923.

GIFT OF CARNEGIE CORPORATION

thousand boats and rafts passed West Troy on the Erie and Champlain Canals. The new business created by this immense movement of freight cannot be estimated. Before the Champlain Canal was opened there were but twenty vessels on the lake. In 1826 there were two hundred and eighteen bringing timber, staves, shingles, boards, potashes, and giving employment to thousands of men in navigation, shipbuilding, and lumbering. Rochester became a flour-milling centre, and turned out one hundred and fifty thousand barrels a year. Even Ohio felt the impetus, and boats loaded with pig-iron from Madison County were seen in the basin at Albany. Orders for cherry boards and dressed lumber were received at Buffalo from Hartford and from dealers in Rhode Island. The warehouses along the canal bank at Buffalo were filled with the products of the East and the West; with wheat, grain, lumber, posts and rails, whiskey, fur and peltry bound for the markets of the Atlantic, and with salt, furniture, and merchandise bound for the West.

"To the people of the West the opening of the canal was productive of vast benefit. Said a Columbus newspaper: 'It takes thirty days and costs five dollars a hundred pounds to transport goods from Philadelphia to this city; but the same articles may be brought in twenty days from New York by the Hudson and the canal at a cost of two dollars and a half a hundred. Supposing our merchants to import on an average five tons twice a year; this means a saving to each of five hundred and sixty dollars.' It meant, indeed, far more: it meant lower prices, more buyers, a wider-spread market, increased comfort for the settlers in the new States, and, what was of equal importance, an impetus to internal improvements which should open up regions into which even the frontiersman would not go." [1]

Connection Between the Great Lakes and the Mississippi River

A connection through Ohio and Indiana was undertaken after the opening of the Erie Canal for the purpose of extending the benefits of the new waterway to districts south of the Great Lakes. Canals were built with this object between Evansville, Cincinnati, and Toledo (opened 1828), between Portsmouth on the Ohio and

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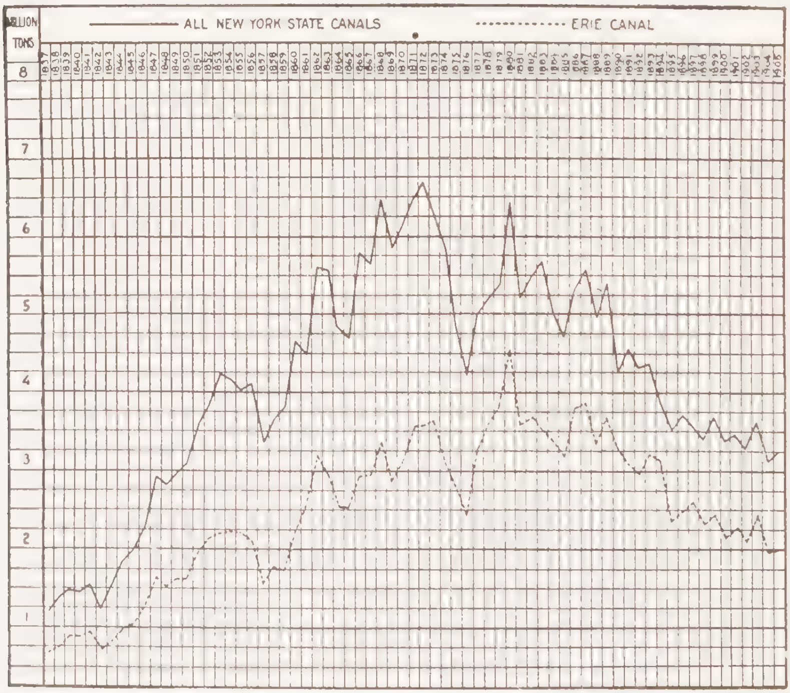
[1] McMaster, *History of the United States*, vol. v, pp. 134–136.

Cleveland (opened 1832), and between Erie, Pennsylvania, and the vicinity of Pittsburgh.[1]

In 1835 there was shipped from Ohio alone to New York by way of the Erie Canal, 86,000 barrels of flour, 98,000 bushels of wheat, 2,500,000 staves, and much miscellaneous freight. In 1846, Buffalo exceeded New Orleans in its receipts of flour and wheat. Lard, bacon, and other Western produce were also in part diverted from the southern Mississippi River route. These products, however, still mostly went by river, in contrast to breadstuffs, which tended toward the Lakes.[2]

Statistics of Shipments Over the Erie Canal

In later years the traffic over the Erie Canal has been subject to wide variations.



Traffic of New York Canals, 1837-1906[3]

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[1] Meyer, *sup. cit.*, pp. 280 ff.

[2] Dixon, *sup. cit.*, p. 25; Poor, "Sketch of the Rise and Progress of the Internal Improvements and of the Internal Commerce of the United States," *Poor's Manual*, 1881.

[3] Report of Inland Waterways Commission, 1908, p. 219.

Business grew steadily till 1872-73, and then again, after the panic of 1873, up to 1880. But it is evident that after 1880 the falling off in canal business was persistent. These statements relate to absolute tonnage handled. If one considers the relative importance of canal and railroad traffic, the figures are still more striking. The following table shows the tonnage on the New York Central and Erie Railways and on the New York canals at ten year intervals from 1853 to 1915.

TONNAGE ON NEW YORK CENTRAL AND ERIE RAILWAYS AND NEW YORK CANALS, 1853–1915[1]

Year	New York Central	Erie	Canals	Total
1853	360,000	631,039	4,247,853	5,238,892
1863	1,449,604	1,815,096	5,557,692	8,822,392
1873	5,522,724	6,312,702	6,364,782	18,200,208
1883	10,892,440	13,610,623	5,684,956	30,188,019
1893	21,312,072	17,309,198	4,031,963	42,653,233
1903	38,081,380	30,586,743	3,616,385	72,284,508
1913	55,582,087	40,026,986	2,602,235	98,211,308
1915	64,287,881	35,257,739	1,858,114	101,403,734

It was the decline in tonnage after 1880, and still more the decrease in the total amount of business done by the New York canals as compared with the railroads, which led to the construction of the New York Barge Canal. The effect of the enlargement has been to increase the tonnage moved on the canal system from 1,154,328 tons in 1918 to 2,032,317 tons in 1924—a large gain, but not one which has raised the canal even to the level of a moderate-sized railway from the point of view of the carriage of freight.

Reasons for Decline in Canal Traffic

The falling off in Erie Canal traffic is to be ascribed in part to shifts in the location of sources of production of articles upon which the canal relied. Thus the decline in iron ore is due to the decreased production of the Lake Champlain mines, the decline in lumber to the cutting of the New York and Michigan forests, and the decrease in coal shipments, at least in part, to the extensive use of bituminous coal, mined in regions not directly accessible for coal shipments.[2] But this is not the whole story, for local traffic has been lost to the automobile because the motor truck gives better service than the canal boat, and grain has gone to the railroad for the same reason. Canal service is slow, seasonal, subject to interruptions by flood or by accident to the locks, and unable to seek out and develop new types of business originating at a distance from its route. In spite of certain natural advantages and the expenditure of large sums of money, the canal is a poorer transportation instrument than the railroad for the carriage of most kinds of freight.

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[1] Report of the Inland Waterways Commission, 1908, p. 227; United States Department of Commerce, Bureau of Foreign and Domestic Commerce., *Inland Water Transportation in the United States*, 1923, p. 36.

[2] Fairlie, "New York Canals," *Quarterly Journal of Economics*, February, 1900.

New York Ship Canal

The failure of even the enlarged Erie Canal to attract expected business has led to renewed plans for improvements that recall the ambitious projects for extension and deepening of the Mississippi. Briefly stated, present proposals look to the construction of a 20- or a 25-foot waterway from Lake Erie or Lake Ontario to the Hudson River. There are three possible routes discussed: from Oswego on Lake Ontario to the Hudson River, following in general the present New York State Barge Canal, but entering the Hudson at Albany *via* Normans Kill; from Buffalo to the Hudson, in general following the Barge Canal; and from Lake Ontario *via* the St. Lawrence River, Lake St. Francis, and Lake Champlain to the Hudson. Meanwhile the River and Harbor Act, approved March 3, 1925, provides for increasing the depth of the river from the Albany-Greenbush bridge on the Hudson to 27 feet at mean low water, which would give a minimum 25-foot channel from Lake Ontario to New York, or from Lake Erie to New York if the Buffalo route were adopted or the Welland Canal sufficiently enlarged.

Such a channel would conceivably permit ocean-going vessels with a tonnage in excess of 8,000 tons to proceed from New York to the Lakes. It is, however, doubtful whether vessels of this description will ever actually embark on a canal 185 miles long (Oswego to the Hudson) and with a standard width of only a few hundred feet.

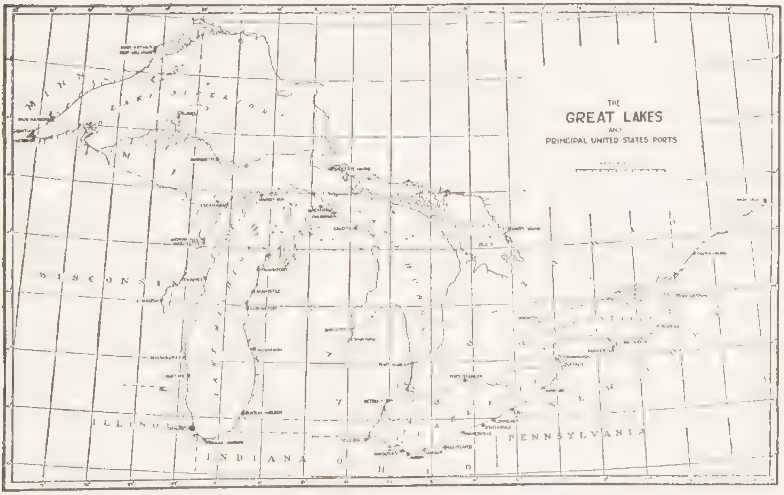
Engineer's Report Unfavorable

The last Engineer's Report was emphatically of the opinion (1) that of the three routes proposed, the shortest, by way of Oswego, was the best; (2) that if a canal were built it should have a depth of 25 feet, not of 20 feet; and (3) that it was unlikely that even a 25-foot ship canal would save as much as the sum of its interest, maintenance, and operating charges.

These conclusions were based on the premise that a 25-foot canal would cost about $500,000,000, that interest, sinking fund charges, and maintenance would amount to $30,360,000, and that the annual probable savings would be $22,500,000, including reductions in rate upon traffic which continued to move by rail as well as that which was diverted to the new canal. Space does not permit the reproduction of the very careful estimates of business to be expected by a ship canal through New York State, except to say that grain constituted the principal item, with coal, ore, and oil following in the order named.[1] It is possible, of course, that this report is unduly pessimistic, but it is the result of careful study by an independent board, and is likely to discourage prosecution of the New York project for some time to come.

Great Lakes

The last form of inland waterway transportation which we shall mention is that of the Great Lakes. Figures given in the preceding chapter show that the Great Lakes now carry a larger tonnage than all of our other inland waterways combined.[2]



The Great Lakes

Prior to the opening of the Erie Canal, however, the Lakes possessed no such importance, for Western settlements before 1825 were attracted by the Ohio River rather than by the Lakes, and except in Ohio there was no large group of settlers in 1825 north of the watershed which separates the rivers emptying into the Lakes from those emptying into the Mississippi. In fact, even in Ohio the communities upon the Lake Erie shore were few and unimportant.[1] This meant that the foundations for Lake commerce were lacking until the completion of the Erie Canal on the east and the Ohio canals upon the south made Lake Erie a link in a route which neither began nor ended on her shores.

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[1] Reports from the Chief of Engineers on preliminary examination and survey of deeper waterway from the Great Lakes to the Hudson River suitable for vessels of a draft of 20 or 25 feet, Sixty-ninth Congress, First Session, H. R. Doc. No. 288. See also Sixty-ninth Congress, Second Session, H. R. Doc. No. 7.

[2] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Inland Water Transportation in the United States*, 1923.

The real use of the Great Lakes began with the working of the iron-ore deposits of Lake Superior and with the extension of wheat production to districts west and northwest of Duluth. For such traffic, Lakes Superior, Huron, and Erie afforded a route as direct as that supplied by rail, while the depth of water and freedom for maneuvering in these inland seas made it possible to perfect a type of bulk steam carrier which reduced the cost of transportation to extremely low figures.

St. Mary's Falls Canal

There are only two points upon the Great Lakes where it has been necessary to construct extensive works in order to facilitate transportation. The first of these is at St. Mary's Falls in the narrows between Lake Superior and Lake Huron, and the second is at the Falls of Niagara, between Lake Erie and Lake Ontario.

Previous to 1855, the passage of freight to and from Lake Superior necessitated a portage of one mile around the St. Mary's Rapids, and traffic was relatively light.[2] The first ship canal, built on the American side of the river, was opened in 1855, and in 1895 a canal on the Canadian side was added. The original American canal had a depth at low water of 10 feet. The Canadian canal was 19 feet deep, and the improved American canal now in use has a normal low water depth of 20 feet.

Welland Canal

The other critical point in Lake navigation is between Lakes Ontario and Erie. The Welland Canal around Niagara Falls was opened in 1829, with a depth of 8 feet. This was subsequently increased to 14 feet, where it now stands. Meanwhile, channels in the St. Clair River and harbor entrances on the Lakes have been deepened until the minimum depth between Buffalo and the head of Lake Superior is between 18 and 20 feet.[1] This permits of vessels with a capacity as high as 15,000 tons. The most favored type of modern lake freighter is 600 feet long, with a capacity of 12,000 tons—although the average vessel is, of course, still of considerably smaller dimensions.

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[1] Paxson, *History of the American Frontier*, chap. xxx, p. 268.

[2] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Inland Water Transportation in the United States*, 1923, p. 53.

Extent of Traffic Upon the Great Lakes

The construction of canals and the deepening of channels at the points mentioned now enable shipping lines on the Great Lakes to operate large vessels from Duluth and Fort William to Lake Erie ports, and in this way to reduce the ton-mile cost of transporting commodities such as ore and grain to a figure far below that which any other inland waterway in the United States can hope to attain. Instead of being driven from the field as the Erie Canal has been, the Lakes increased their tonnage up to about 1912 and have, on the whole, maintained it since that time. This statement is based upon the report of the Commissioner of Navigation relative to the tonnage of steam vessels documented on the northern lakes, from which the following figures are taken:

STEAM VESSELS DOCUMENTED ON THE NORTHERN LAKES, 1868–1925[2]

Year	Number	Gross tonnage
1868	624	144,117
1890	1,527	652,923
1910	2,107	2,508,469
1915	2,348	2,487,945
1920	2,456	2,856,555
1922	2,228	2,480,252
1925	805	2,515,958

Figures of business done show that the tons of freight handled through the St. Mary's Falls canals, which may perhaps be taken as representative of the business of the Lakes as a whole, increased up to 1916, then declined, but between 1921 and 1923 regained approximately their position of seven years before. The character of the traffic of the Lakes will be considered in Chapter **X.**

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[1] Report from the Chief of Engineers on preliminary examination and survey of deeper waterway from the Great Lakes to the Hudson River, etc., Sixty-ninth Congress, First Session, H. R. Doc. No. 288, p. 19; Report of Joint Board of Engineers appointed by the Governments of the United States and Canada on St. Lawrence waterway project, 1926. The actual controlling depth during the season of 1925 was 18 to 19 feet.

[2] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Inland Water Transportation in the United States*, 1923, p. 49; Commissioner of Navigation, Merchant Marine Statistics, 1925, p. 9.

Depth of Channel Between Port Colborne and the Mouth of the St. Lawrence River

The similarity from several points of view of lake and ocean navigation and the unusual size and capacity of the St. Lawrence River have led to proposals to create a ship channel between Montreal and the Lakes. This is a much more promising undertaking than either the Great Lakes-Gulf waterway or the New York Ship Canal project.

At the present time the channel in the St. Lawrence River from the Strait of Belle Isle to Montreal, 1,003 statute miles, has a depth of 30 feet and a minimum width of 450 feet. From Montreal to Lake Ontario is a distance of 182 statute miles, of which a total of 46 miles are in six lateral canals, having a depth of 14 feet and lock dimensions of 270 by 45 feet. The canals are separated by stretches of navigable water. Above the canalized section there is a depth of 30 feet for a distance of 68 miles to Lake Ontario. From the foot of Lake Ontario to the Welland Canal there is a distance of 160 miles with free navigation. The Welland Canal itself is 26¾ miles long, with 25 locks and a depth of 14 feet.

In order to open a passage for ships drawing 25 or 30 feet of water from Belle Isle to Lake Erie it is necessary only to deepen the Welland Canal and the lateral canals just mentioned, and to improve in addition such portions of the remaining stream bed as may be unsafe for large ships. The total requiring treatment, exclusive of the Welland Canal itself, is estimated at 67 miles.[1] It may be added that by proper construction the length of canal navigation in this distance may be reduced. The project submitted to the International Joint Commission of 1921 provided for only 33 miles of canals, the balance of improved waterway consisting of deep pools in which vessels could proceed at normal speed.

As a matter of fact, the Canadian Government has already undertaken to enlarge the Welland Canal to a minimum depth in the earth cuts of 25 feet, and structures are being sunk to a 30-foot depth, so that they can be easily deepened again by dredging if this seems desirable.[2] There will be five lift locks, 820 feet long, with a depth of 30 feet of water over the miter sills.

[1] Ritter, *Transportation Economics of the Great Lakes-St. Lawrence Ship Canal*, 1925, pp. 11-12.

[2] Ritter, *sup. cit.*, p. 13; Report from the Chief of Engineers on preliminary examination and survey of deeper waterway from the Great Lakes, etc., *sup. cit.*, p. 20.

St. Lawrence Ship Canal Project

With respect to the recent history of the St. Lawrence Ship Canal project, reference may be made to the treaty of 1909 between the Governments of the United States and Great Britain relating to the beneficial use of the waters of the St. Lawrence between Montreal and Lake Ontario.

On January 21, 1920, the Governments of the United States and Canada, acting under the provisions of Article IX of this treaty, referred to an International Joint Commission a series of questions bearing upon the character, cost, and probable benefit of improvements in the St. Lawrence River between Montreal and Lake Ontario designed to make the river navigable for deep-draught vessels of either the Lake or ocean-going type. This commission reported under date of December 19, 1921.

In May, 1922, Secretary Hughes advised the Canadian Government that President Harding favored the negotiation of a treaty to be framed on the basis of the report of the joint commission, or such modifications as might be agreed upon. To this Premier King replied from Ottawa that the Canadian Government did not consider the time opportune for the negotiation of a treaty. In 1924, however, the Governments of the United States and Canada appointed, each for itself, a national committee of nine members to advise on all questions that might arise in the consideration of the project for the improvement of the St. Lawrence. The chairman of the Canadian committee was George Perry Graham, Minister of Railways and Canals, and the chairman of the American committee was Herbert Hoover, Secretary of Commerce. The two governments also erected a joint board of engineers, consisting of three members representing Canada and three members representing the United States, and submitted to this board a new list of questions relating to the cost and practicability and incidental effects of the proposed St. Lawrence improvements. This board reported in November, 1926, and the report of the American national committee followed on December 27th of the same year.

About the same time, on December 31, 1926, the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce published a survey of the economic aspects of the proposed waterway improvements between the Great Lakes and the Atlantic seaboard which assembled a considerable amount of statistical data.

Estimated Cost

It appears from the foregoing that the most comprehensive and authoritative information at present available regarding the St. Lawrence project is that contained in the reports of the International Joint Commission of 1921 and in reports made by or prepared for the United States committee of 1924.

Summarized briefly, the engineers of the Commission of 1921 estimated the cost of a 25-foot channel from Lake Ontario to Montreal, including six locks with a depth of 30 feet over the sills, at $252,728,200. For a 30-foot channel the estimate was increased by $17,986,180 to a total of $270,714,380. This estimate included no allowance for putting the six existing canals in this route out of commission, nor was any allowance made for the charter rights and privileges, whatever they might be, of the New York and Ontario Power Company, at Waddington, New York. On the other hand, the estimate did include the cost of power houses equipped to deliver 1,464,000 horsepower annually. According to the Commission, the work could be completed in eight years.[1]

The Joint Board of 1926 estimated the cost of a 25-foot channel from Lake Ontario to Montreal, including eight or nine locks, at $350,100,000 or $385,500,000, according to the alternative adopted. These plans included power houses initially installed to deliver 1,365,000 horsepower annually, but with an ultimate installed capacity of from 2,619,000 to 2,730,000 horsepower at an additional expense of $23,900,000 to $38,100,000.[2] The increase of the Board's estimates over those of the Joint Commission was explained by the Board to be due partly to the more accurate data available in 1926, and also partly to measures proposed in 1926 to provide a fuller power development on the St. Lawrence and to insure more satisfactory winter operation than was contemplated in 1921. The time required to complete the work was set at from seven to eight years, substantially as estimated by the Commission of 1921.[3]

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[1] Report of the International Joint Commission concerning the improvement of the St. Lawrence River between Montreal and Lake Ontario for navigation and power, 1921. Sixty-seventh Congress, Second Session, Sen. Doc. No. 114, Ser. 7972, pp. 168–169.

[2] The expense of improving the river for navigation alone was estimated at $167,720,000.

[3] Report of Joint Board of Engineers appointed by the Governments of the United States and Canada, November 16, 1926. The report of the Joint Board of Engineers in 1926 includes a careful study of the various diversions of water from the Great Lakes and a consideration of proposals for artificial regulation. The Board was generally opposed to regulation as expensive and impractical, although it did contemplate

Character of Ships Which Would Use an Improved St. Lawrence

The best recent discussion of the type of vessels which are likely to use an improved St. Lawrence is to be found in the report of the Joint Commission of 1921. The weight of expert opinion summarized in this report is that present Lake freighters are not suitable for ocean or narrow-channel navigation. Such vessels are limited to a draught of 20 feet because of the available depth of water in the Lakes, and to a width that cannot much exceed 60 feet at present because of the limitations of approved types of loading and unloading machinery. On the other hand, they secure capacity by increasing length, until a typical lake carrier of 14,000 tons will exceed an ocean vessel of the same tonnage in length by 150 or 200 feet.[1] The length of the Lake freighters makes them difficult to maneuver, while their shallow draught makes them unstable in heavy seas. Lake boats are not, therefore, likely to frequent the St. Lawrence or to engage in coastwise, or still less in transoceanic, navigation.

Whether Ocean-going Vessels Will Ascend to the Great Lakes

There is no consensus of opinion with respect to the use of ocean vessels on inland waterways.

Those who take the view that ocean vessels cannot be expected

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some dredging and the construction of dikes or sills at certain places to affect stream flow in the Niagara and St. Clair Rivers. The Board pointed out that regulative works might be administered to serve either of two divergent purposes. They could be used to decrease the fluctuations in Lake levels for the benefit of navigation and of riparian interests on the Lakes, at the expense of the outflow into the St. Lawrence; or they could be used to improve the outflow into the St. Lawrence for the benefit of power production and of navigation on the lower river, at the expense of the levels of the Lakes. If regulative works were operated to decrease fluctuations in Lake levels for the benefit of navigation and of riparian interests on the Lakes, they would serve primarily American users; if they were operated to improve the outflow into the St. Lawrence for the benefit of power production and of navigation on the lower river, at the expense of the levels of the Lakes, they would yield their chief benefits to Canadian consumers. This conflict in interest might conceivably cause difficulties between Canada and the United States. The Joint Board of 1926 pointed out concretely that in case a future deficiency in water supply should occur, the question would arise whether the emergency should be met by holding back water in the Lakes at the expense of the St. Lawrence, or whether the navigable depth in Montreal Harbor should be maintained at the expense of Lake navigation. Such obstacles presented by national divergencies in interest are not insuperable, but they are worth mentioning, and they undoubtedly tend to delay a comprehensive treatment of the Great Lakes-St. Lawrence problem.

[1] Ritter, *Transportation Economics of the Great Lakes-St. Lawrence Ship Canal*, 1925, p. 55.

to use the St. Lawrence or the Great Lakes make the following points:

1. The most economical ocean vessel is at present of 30 feet draught or even more. Lake ports and channels generally cannot accommodate such craft even if they pass through the St. Lawrence and the Welland Canal.
2. Operation through locks in waters of restricted depth and in narrow channels involves delay. Ocean vessels are expensive, time is a factor, and delay destroys profits.
3. River and canal navigation is dangerous, and insurance rates correspondingly high. The dangers in the St. Lawrence include fog, and at some seasons of the year ice, as well as the dangers due to shallow channels and limited maneuvering space.
4. Outgoing vessels from the Lakes cannot count on full loads, because the bulk of the available traffic will be eastbound.

Those who believe that ocean boats can and will enter the Great Lakes if the proposed improvements are completed reply:

1. Most vessels which enter or leave American harbors draw less than 25 feet, and most of our imports and exports are carried in such vessels.
2. Experience on the St. Mary's Falls canals and on the Atlantic seaboard seems to show that the restricted channels of the St. Lawrence and the Great Lakes offer no particular problem to ocean-going ships. More or less restricted channels are found at the entrances to nearly all the big seaports.
3. Both as regards fog and ice, the St. Lawrence route to Europe compares not unfavorably with the customary steamer lanes from north-Atlantic ports.
4. Excluding grain, the imports into the territory tributary to the St. Lawrence route balance the exports from that territory. Grain certainly causes an excess movement eastward, but many ocean ports are prosperous in spite of equal disparities.

It is scarcely possible yet to decide confidently between these opposing views. It is probable, however, that only moderate-sized ocean vessels at best will reach the lakes even after the St. Lawrence will have been improved, and it should be remembered that climatic conditions will bar even these boats during five months of the year.

Volume of Traffic

The International Joint Commission ventured no estimate of the amount of traffic which might be expected to move on an improved St. Lawrence River. The National Committee of 1924, however, basing its conclusions upon the investigations of the United States Department of Commerce, concluded that the potential traffic of such a waterway would amount to between 18,600,000 and 23,600,000 tons. In arriving at this figure the customs declarations of United States exports were examined for the years 1921-24, and the tonnage was computed of the most important export commodities originating in states tributary to the Great Lakes and shipped to the seaboard between the months of May and November. To this figure was added an allowance for Canadian export wheat, an allowance for intercoastal traffic, and an estimate for imports based upon the importation between 1921 and 1924 into the same tributary states of articles of a type which might be expected to make use of water carriage. This provided the basis for a rough guess at the volume of traffic that might possibly use the St. Lawrence River if improved, always assuming that the river could compete with railroad routes between the seaboard and the lakes. On this point, the Department of Commerce took the view that costs by river would be low enough to attract rubber, coffee, tea, newsprint, and wood pulp westbound, and, eastbound, to secure for the St. Lawrence route a long list of commodities, including meat products, copper, iron and steel, machinery, automobile parts, and wheat.

Possibility of Railroad Development in the Great Lakes Area

Generally speaking, the Joint Commission believed that the railroads of the United States were in need of extensive improvements, but that their credit was poor and their ability to raise the necessary billions problematical. While it observed that the railroads of Canada had surplus capacity, the Commission was convinced that the facts called for the opening of new transportation channels. To this conclusion the National Committee added the observation that a deep shipway between the Lakes and the Atlantic Ocean would lessen the economic handicaps of adverse transportation costs to an area in the interior of the continent occupied by 40,000,000 people.

Advantages and Disadvantages of Water Transportation in General

On this whole question of waterway improvement there are two sharply defined opinions in the United States.

One view is that expressed by Mr. Hoover, who contends that the capital cost of new expansion will be less by water than by rail, and that increased depth of water and technical improvements in equipment upon our waterways will make them once more the most economical means of transport for many kinds of goods. The underlying reasons for the position of advocates like Hoover are two: first, that rivers and lakes are facilities which nature provides, in a measure, free of expense; and second, that the tractive effort required to move a ton of freight in a water-supported vehicle is less than is required to move the same freight in a wheeled vehicle operating upon the land.

The contrary view to that just stated is that it will cost more in most cases to make a waterway serviceable and to maintain it than to build and maintain a railroad of equal capacity. This conclusion in turn rests upon several assumptions, which can be distinguished. Nature does not provide canals, it is pointed out, and, even though she creates rivers and lakes, she does not always make them navigable. Naturally the cost of improving different streams will vary, but it may easily be large. Again, water service is slower than rail service, and less flexible because more localized. And finally, the lower tractive effort is said to be offset by the necessity of transshipment. Freight rarely originates upon the waterway or is consigned to a destination on its banks. Goods must, therefore, use the rail even for most water hauls, and transshipment is expensive. These are not all the elements in the controversy upon either side, but they indicate the trend of the discussion.

Conclusions With Respect to Great Lakes-St. Lawrence Waterway

It will readily occur to the reader that the weight to be given to the various considerations mentioned will depend upon the facts in each case. The common arguments for the St. Lawrence waterway are strong because in this instance the improvement of short stretches of river navigation will open a connected route of 1,800 miles, and because the size and depth of the Lakes permit the use of large ships. On the other hand, there will be difficulties in this instance in persuading voters in the two countries concerned to supply funds, because Americans will hesitate to appropriate funds for the development of Canadian waterways and Canadians will hesitate to encourage competition with their government-owned railways.

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CHAPTER III

THE INVENTION OF THE RAILROAD AND ITS INTRODUCTION INTO ENGLAND AND CONTINENTAL EUROPE

To UNDERSTAND the modern railroad we must refer to experience in England which came to fruition toward the end of the eighteenth century. This experience related in part to the roadbed upon which wheeled vehicles could be run, and in part to the use of steam as a propelling power.

Early Experiments With Steam Power for Transportation

The possibility of using power derived from combustion in order to move wheeled vehicles occurred to many men toward the last of the eighteenth and early part of the nineteenth century. There are four names which are usually associated, however, with the development which led to the placing of the steam engine on wheels and its use as a tractive agent—namely, that of a Frenchman, Joseph Cugnot; that of an American, Oliver Evans; and those of two Englishmen, Richard Trevithick and George Stephenson. Of these men, Cugnot was a retired military engineer, Evans an American wheelwright, Trevithick a Cornish engineer and inventor, and Stephenson a coal-mine mechanic resident in the north of England.

Cugnot's first carriage was built in 1769. It was a three-wheeled vehicle, put in motion by an engine composed of two single-acting cylinders, the pistons of which acted alternately on a single front wheel. When tried upon a road, it succeeded in carrying four persons at a speed of about two and one-fourth miles an hour; but because of the small size of the boiler, it was compelled to stop every twelve or fifteen minutes in order to raise more steam.[1]

Evans, in the United States, experimented with the steam engine in 1800 or 1801, and three years later constructed an engine of five horsepower which he placed upon a large scow mounted upon wheels. Evans succeeded in driving this primitive carriage through the streets of Philadelphia, after which he launched it upon the Schuylkill River, and, attaching a paddle-wheel to its stern, propelled it downstream sixteen miles to the junction of the Schuylkill and the Delaware.

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[1] Smiles, *Lives of the Engineers: George and Robert Stephenson*, p. 77. London, 1904.

Richard Trevithick gained his first experience in working and repairing pumping engines in the tin mines of Cornwall, England. In 1803 he built a steam carriage which was tried upon the public road in one of the Cornish mining towns. Somewhat altered and improved, this engine was successfully exhibited in London. In 1804, Trevithick built a locomotive to run on rails which proved able to draw ten tons of bar iron, together with necessary carriages, water, and fuel, nine miles at the rate of five and one-half miles an hour.

George Stephenson, like Trevithick, worked as a young man with the pumping engines then used in England to keep mines clear of water, though his experience was with the coal mines of Northumberland rather than with the tin mines of Cornwall. He also operated a winding engine used to draw up coal from the pit. In 1812, when he was thirty-one years of age, he was appointed engine-wright in one of the more important collieries of his district. During the years 1813 to 1815, Stephenson interested his principals in the project of constructing a locomotive engine, mounted on wheels and driven by steam, which should replace horses in hauling the coal taken out of the mine from the mine to tidewater. Stephenson's first engine of this type in 1814 drew eight loaded carriages of thirty tons weight each at a speed of about four miles an hour on an ascending gradient of 1 in 450. His second engine, in 1815, was even more successful.[1]

Development of the Permanent Way

Meanwhile in England considerable progress had been made in improving the surface over which certain kinds of vehicles were drawn. Apart from the general amelioration of the roads, there were districts in which it proved profitable to build long stretches of narrow tracks made of stone or wood in order to reduce the cost of traction. These stretches were known as "way-leaves," because in establishing them it was necessary to get permission or "leaves" for rights of way over private land, and they were serviceable for the haul of commodities like coal, particularly when the shape of the land made it possible to secure a downgrade on the loaded and an upgrade on the light or return haul between the mines and tidewater.

During the last of the eighteenth and the first part of the nineteenth century way-leaves, or tramways, to use a word more descriptive of the whole undertaking, multiplied, especially in the mining districts near Newcastle, and in other mining sections in England, in Scotland, and in Wales. When the steam engine became sufficiently developed to suggest its use in transportation it was employed to pull cars upon these local roads. Indeed, the supporting power of iron rails as well as the opportunity for economy arising out of a regular and abundant supply of freight made the use of engines in mining operations profitable from the beginning. There was some question as to whether the adhesion of smooth wheels to a smooth rail would give sufficient tractive power, but experience soon showed that fears on this score were groundless.

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[1] *Ibid*, chap. v. See also Wood, *Practical Treatise on Railroads*, 3rd ed., 1838.

Stockton and Darlington Railway

It was at this stage of the perfection of English mechanical transport that persons in the northeastern part of England carried through a larger undertaking which helped to open people's eyes to the possibilities of the railroad. This undertaking was the construction of a railway from Stockton, the port of the river Tees, to Darlington, a distance of twelve miles westerly as the road was eventually laid down. The main purpose in improving communication between Darlington and Stockton was to facilitate the exporting of coal by avoiding the windings of the river. Men in Stockton, and at least one element in Darlington, proposed a canal to handle coal shipments, but in the end the advocates of a railway, led by an energetic Quaker named Edward Pease, prevailed and a railroad line was built.[1]

The Stockton and Darlington Railroad was opened on September 27, 1825. George Stephenson was the company's engineer and responsible for most of the technical decisions made in the course of the construction of the road. These included the question as to whether rails should be of wood or of wrought or cast iron, what the weight of the rail should be, what the gauge, and, most important, what should be the motive power.

Fortunately, George Stephenson had a locomotive engine at a near-by colliery, and when the question of motor power arose he was able to put this machine through its paces before directors of the Stockton and Darlington Company, and to convince them that the steam locomotive was reliable, powerful, and cheap. This demonstration was confirmed at the opening of the railroad, when a locomotive which Stephenson built for the purpose attained a speed of fifteen miles an hour and hauled a load, including passengers, coal, and merchandise, which weighed about ninety tons.

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[1] *The Diaries of Edward Pease, the Father of English Railways.* London, 1907.

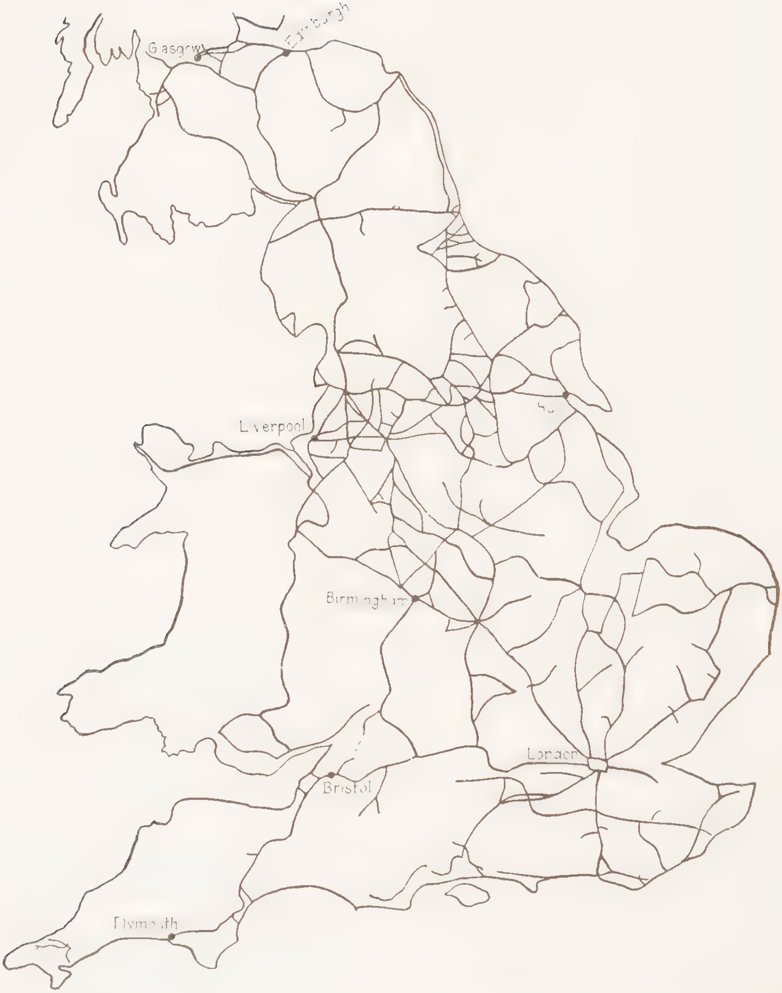
The Stockton and Darlington Railway differed from most of the colliery roads which had preceded it in that it was designed to serve many shippers as a common carrier, not to handle the business of a single mine. Like some of the early American and continental railroads, it was originally intended to be free to all persons who chose to place their wagons and horses or engines upon it, provided that they paid the established tolls; although it was not long after business had begun before the company found it necessary to take over the entire operation of the line.

The Stockton and Darlington was also, perhaps, the earliest railway to transport passengers by locomotive power. Passengers were not hauled by the company's locomotives for some years after the opening of the line, however, but by private coaching companies which used horses, and availed themselves of the convenience of the railroad only with regard to its right of way. The beginning of regular passenger service can better be associated with the construction of the Liverpool and Manchester Railroad than with that of the Stockton and Darlington, as the latter was essentially a coal carrier.

Liverpool and Manchester Railway

The next important railway in England was the Liverpool and Manchester line, opened in 1830. With this company we have for the first time an undertaking (a) which contemplated from the beginning the carriage of passengers and miscellaneous merchandise, not as in the case of coal railroads, the carriage of a single kind of freight; and (b) upon which no power save that of the locomotive engine was ever used.

There is no reason to suppose that the Liverpool and Manchester Railroad was constructed because of the success of the Stockton and Darlington. In the first place, the greatest success of this last-named carrier came in the years subsequent to the opening of the longer line; and in the second place, the Stockton and Darlington was only one of many English enterprises in which the locomotive engine was rendering useful service in 1825. It is, however, a fact that the promoters of the Liverpool and Manchester took pains to acquaint themselves with what had been accomplished along the River Tees, and that they employed George Stephenson, the expert for the Stockton and Darlington, as their engineer. These two cir-



Railways in Operation in England and Scotland, 1850 cumstances establish a connection between the Stockton and Darlington and the Liverpool and Manchester Railroads which lends continuity to the story of English railroad development.

It is of less importance to describe the local engineering difficulties which were encountered in the course of building a line from Liverpool to Manchester than to point out, first, that the controversy which arose over the best form of motor power to employ upon it was the cause of several important improvements in the locomotive engine, and, second, that the attention of the country was so fixed upon this enterprise that its success finally established in England the position of the steam-driven vehicle upon the iron road.

Railroad Construction in England After 1830

In England the opening of the Liverpool and Manchester Railroad was followed by the construction of railways connecting Liverpool with Birmingham, and London with Birmingham and with Bristol. In 1835, a railroad was opened between Newcastle and Carlisle, and soon after, lines were in existence between Leeds and Hull, Leeds and Manchester, and Manchester and Sheffield, as well as between other important Midland towns and between London and outlying districts. The map on the preceding page, based upon a railway map of England published about 1850, shows that in that year the framework of the English railway system was practically complete.

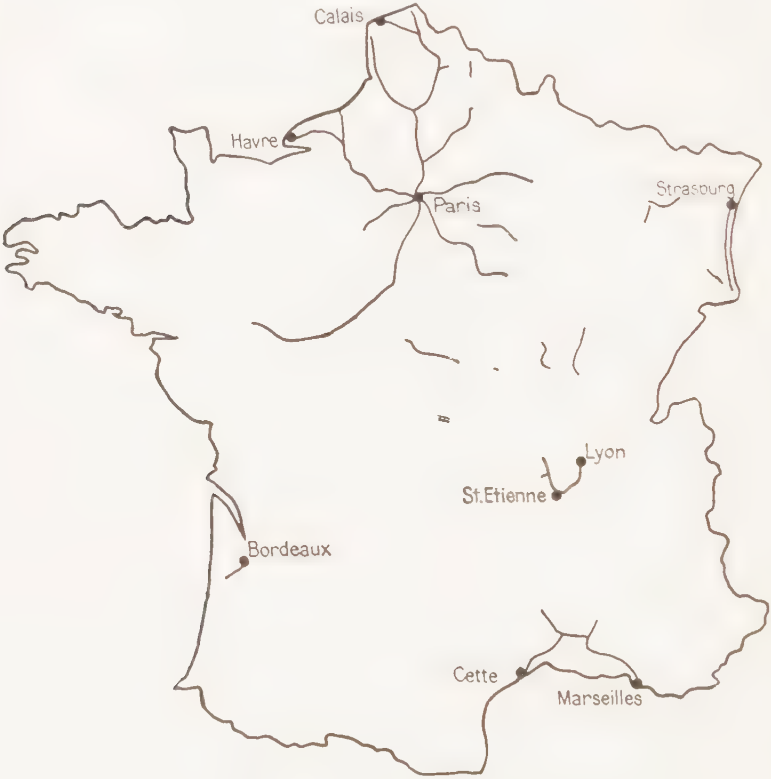
We may now consider briefly the introduction of railways upon the continent of Europe.

Belgium

In Belgium, the beginning of railroad construction was delayed by the desire of the Belgian legislature to determine in advance whether railroads should be built by public or by private interests, as well as by the wish of the legislature to decide upon the principal routes which should be covered before any work was done. In 1834, however, railroad building was commenced, and by 1837 three railroads had been opened, one from Malines to Brussels, 20 kilometers, opened May 5, 1835; one from Malines to Antwerp, 24 kilometers, opened May 27, 1836; and one from Malines to Termonde, 27 kilometers, opened January 2, 1837.

France

The beginning of modern railroad enterprise in France is usually associated with the introduction of the steam locomotive upon the line from St.-Etienne to Lyon in the year 1832. By itself this enterprise was comparatively unimportant; but the experiment of the St.-Etienne-Lyon Company, in the light of the still earlier successes of the London and Manchester and the Stockton and Darlington Railways in England, attracted the attention of the French legislature, and the sum of 500,000 francs was promptly voted for a study of the whole subject.



Railways in France Opened up to and Including 1849

The preceding map indicates the railway lines which were opened in France up to 1849. During this decade the government considered the whole subject of railroad construction with a very lively sense of its importance, and in 1842 it announced a policy both with respect to the railroads which should be built and with regard to the methods by which these railroads should be financed which, at least so far as construction was concerned, was substantially adhered to. Article 1 of the Law of 1842 declared that a French railway system should be established over the following routes:

1. Paris to the Belgian frontier *via* Lille and Valenciennes.
2. Paris to the English Channel.
3. Paris to the German frontier *via* Nancy and Strasbourg.
4. Paris to the Mediterranean *via* Lyon, Marseilles, and Cette.
5. Paris to the Spanish frontier *via* Tours and Bordeaux.
6. Paris to the Atlantic *via* Tours and Nantes.
7. Paris to the center of France *via* Bourges.
8. Mediterranean to the Rhine *via* Lyon, Dijon, and Mulhouse.
9. Atlantic Ocean to the Mediterranean *via* Bordeaux, Toulouse, and Marseilles.[1]

In subsequent years most of these suggested routed were occupied, southern France receiving her trunk lines, and the gaps to the east and west of Paris being filled.

Germany

In Germany there were experiments with the steam engine at least as early as 1816. In 1814 a railroad between Nuremberg and Furth was projected, and in 1822 one between Frankfort and Bremen. The first railroad opened was that between Nuremberg and Furth on December 7, 1835. The second was that between Leipzig and Dresden in Saxony, opened in 1839. Both lines were designed primarily as passenger carriers. The length of the Leipzig-Dresden Railroad, 115 kilometers, the importance of the cities which it connected, the volume of the business which it secured, and the publicity which accompanied its promotion made it even more significant than its predecessor.

The map accompanying the text sets forth the railroads in Germany which were completed and in operation in 1849. Study of this map will show that the skeleton of the German system was not complete by 1849, yet that even at this date it was possible to observe its structure. The most important parts of the German network were, first, a group of railroads radiating from Berlin much as the French railroads radiated from Paris, and, second, a system which followed the course of the Rhine, terminating on the south at Basel. The Berlin roads reached Bremen, Hamburg, Stettin, Breslau, Halle, and Hamm, connecting the capital of Prussia with the Baltic and North Sea on the north, with the Austro-Hungarian frontier on the south, and with the Rhenish railroads on the west. The Rhenish lines were incomplete in 1849, but they already served Cologne, Bonn, Frankfort, Manheim and Basel, and were rapidly developing a continuous route through the industrial center of Germany from the Netherlands on the north to Switzerland upon the south.

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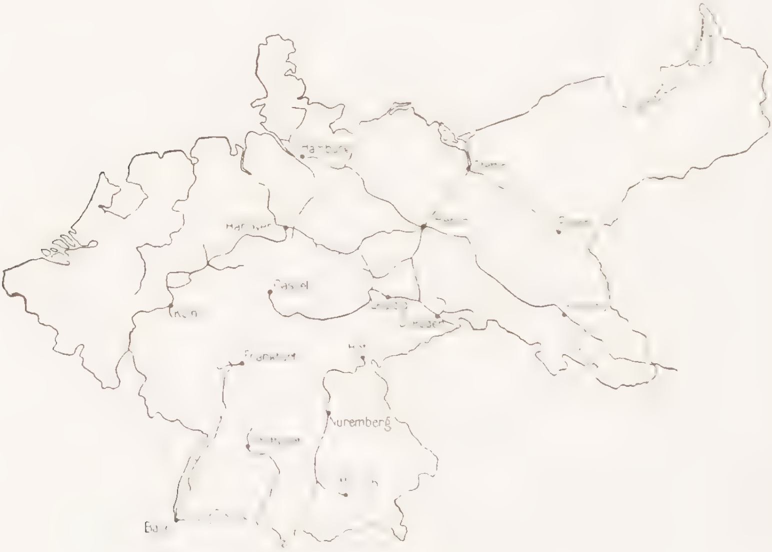
[1] Picard, *Les chemins de fer français*, 1885, vol. i, p. 297.

In addition to the two systems already mentioned, the map reveals the existence of a Würtemberg railway running north from Lake Constance on the Swiss border to Stuttgart and Heilbronn, and destined to be extended to a connection with the Basle-Frankfort railroad on the west, and a Bavarian system serving Munich, Augsburg, and Nuremberg, and reaching north to the Prussian railways, as well as south to the Austrian border.



Railways in Operation in Germany, 1849

The fact that the German railroads grew out of at least four focal points instead of mainly out of one, as in France and Belgium, was due to the circumstance that Germany, when railroads were first built, consisted of a cluster of politically independent units, each with its own ambitions, industry, and financial policy. Railroad engineers in Germany, therefore, proceeded first to the building of separate railway systems and then to the physical connection of these lines into something like a national railway net.

Austria

The early Austrian lines ran out of Vienna, south, northwest, northeast, west, and east, connecting the capital with the Bavarian railways near Salzburg, with the Silesian railway system at Odeberg, and with the Adriatic Sea at Trieste. Important branches joined Vienna with Prague in Bohemia and with Pesth in Hungary. The main provision was for a north-and-south route from the German frontier to the Mediterranean and for an east-and-west route from Bavaria to Budapesth. Inasmuch as these two routes crossed at Vienna, the effect was that of radiation from a common center to the extremities of the kingdom. The completion of the through lines was, however, delayed until after 1850.

The construction of railroads in European countries such as Spain, Italy, Poland, Hungary, and Russia was later than that in England, Belgium, France, Germany, and Austria, and may be neglected in the present study.

Opposition to Railroad Construction

Alike in England and on the Continent, the comparatively rapid spread of railroad construction after 1830 was accomplished in the face of active opposition.

In the first place, many people still refused to admit the possibilities of the new means of transportation, or entertained fears with regard to it which experience has shown to be without foundation. Thus, the Upper College of Medicine of Bavaria gave as its opinion, in connection with the plan to build a railroad between Nuremburg and Furth, that the swift movement of the trains would induce a kind of "delirium furiosum" in the passengers, and recommended, in order to protect spectators from the same disease, that high wooden fences should be built on both sides of the rails.

Opposition also arose from landlords who objected to the construction of railroads across their estates, from owners of existing means of transportation such as coaching establishments, canal owners, and trustees of turnpike roads, and sometimes even from governments, which feared that improved transportation would increase the mobility of the people and encourage the spread of ideas.

Competitive Advantages of the Railway

On the other hand, the railroad enjoyed several important advantages from the beginning.

In England, at least, early railway projects bore a lighter burden of taxation than the coaching companies with which they were called upon to compete. Moreover, the early railroad companies on the Continent received substantial assistance in financing their construction work. In France, as will be explained later, government aid took the form of the purchase of a right of way, together with a grading of the line and the erection of certain buildings. In Germany, the state subsidized the building of some lines, and subscribed to the stock or guaranteed interest upon the securities of other railway companies. Necessary rights of condemnation were granted as a matter of course. In Austria, and even in Belgium, the state lent also a helping hand.

The further question as to whether railroad construction should be mainly undertaken by public or by private parties was answered all over Europe according to local rather than according to general considerations. So far as the theory of the case went, the arguments for and against government construction ran as follows:

Arguments for Construction of Railroads at Government Expense

The arguments for government construction were based on the following considerations:

1. The railroad served a national interest at once military, political, and economic. More particularly, the railroad was destined to contribute to national defense, it made for political unity, and it was expected to promote industrial prosperity by a reduction of transportation costs. For all these reasons many people believed that governments were justified in undertaking railroad construction at public expense. Such construction was also thought to be an essential prerequisite to government control.

2. Private capital was declared to be inadequate to assure the construction of all railroads which should be built. Besides this, it was feared that the construction policy of private capitalists would be based upon the chance of profit. Advocates of public construction believed that it would be hard to persuade private investors to build into unproductive regions of sparse population, or to build for purely political purposes, or to build military lines, however necessary for the general welfare these different types of construction might be.

3. The political influence of private companies was considered dangerous. Lamartine told the French Chamber of Deputies in

1838 that private railroad companies, if charged with the construction of the French railroad system, would own the government before ten years had elapsed. It was pointed out, moreover, that both the political and economic influence of private companies might be exercised at the behest of foreign stockholders to the detriment of national life.

Arguments Against Government Construction of Railroads

The principal arguments against the construction of railroads at government expense were these:

1. The construction of railroads was extremely costly. While this was not a conclusive argument against government enterprise, it led statesmen in different countries to consider carefully the possibilities of construction at private risk and expense. Some persons believed that the necessary private capital could not be found, but others were convinced that such capital would be forthcoming.
2. The necessity of determining which lines should be built first would subject governments to heavy political pressure. Governments might, therefore, promise more than they could or should perform in the hope of pleasing all parties concerned. Government construction for these reasons would be extremely wasteful.
3. Government construction of railroads ran counter to general theories regarding the proper limits of government action which were entertained by influential men in the third and fourth decades of the nineteenth century.

Participation by European Governments in Railroad Construction Determined by Practical Considerations

National policy in railroad building was determined less by theoretical than by practical considerations. Where private capital was abundant, as in England and Prussia, the authorities allowed private corporations to go ahead; on the other hand, where private capital was less abundant or less enterprising, as in southern Germany, or where, as in Belgium, political arguments were important, governments undertook railroad building on their own accounts.[1]

Statistics of Railway Mileage, 1849

The following table, taken from Lardner's *Railway Economy*, gives the figures of population and railway mileage in the principal European countries in the year 1849.

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[1] Sax, *Die Verkehrsmittel in Volks- und Staatswirthschaft*, vol. ii.

TABLE SHOWING POPULATION AND EXTENT OF RAILWAYS IN OPERATION IN 1849, IN THE SEVERAL COUNTRIES OF THE WORLD[1]

Country	Population	Extent of railway open	Length of railroad per million of population	Length of railroad per 1,000 sq.mi. of territory
United Kingdom......	27,019,558	5,000	185.	41.3
Germanic States, including Germany, Austria, Denmark, and Holland	45,753,640	4,542	99.20	16.9
France..............	35,400,486	1,722	48.64	8.4
Belgium.............	4,335,319	457	105.42	40.5
Russia..............	54,092,300	200	3.69	0.1
Italy................	47,606,338	170	3.57	0.54

Principles of Railroad Economics Formulated as Early as 1850

Both in England and on the Continent, railway transportation proved itself superior to transportation over waterways with regard to regularity of movement, ease of terminal handling, adaptation of routes to the needs of business, and in the provision of facilities for freight traffic, including responsibility for loss and damage to freight as well as the more obvious matters of speed and capacity.

Not only this, but the art of railroad operation had so far advanced by 1850 that certain general principles relating to railroad economics were then recognized. Thus we find the following statements of general application in Lardner's volume, published in 1850:

> "1. The greatest railroad revenue is to be anticipated from the carriage of freight, not from the carriage of passengers."

This principle, which was contrary to the expectation of the promoters of many of the early railway lines, and to the experience of railroads like the Liverpool and Manchester during the first years of its operation, is now accepted without dispute. Rail carriers in the United States earn more than four times as much from freight as from passengers. In 1846 and 1847 the percentage of total revenue contributed by the goods traffic on European railroads was nearly 50 per cent of the whole, and was rapidly increasing.

> "2. In the field of passenger business the greatest income and the steadiest income is to be obtained from traffic which pays relatively low rates per person carried."

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[1] Lardner, Railway Economy, p. 496.

It has always been the practice in European countries to separate passengers into three or more classes according to the fares paid and the accommodations provided, class one including those passengers who pay the highest rates and occupy the most luxurious places, class two coming next in line, and classes three and four following. Lardner pointed out in 1850 that while the average fare paid by first-class passengers on the principal English lines in 1847 was 2.385*d* and that paid by third-class passengers was only 0.992*d*, yet the total earnings from third-class passengers were nearly equal to the earnings of first-class service. It may be added that what was merely a tendency in Lardner's time has since become an accomplished fact.

> "3. Railroad expenses do not vary in proportion to the volume of business handled."

This is an important principle to which we shall return in the course of our discussion of railway rates. Lardner did not assign proportions to the fixed and variable expenses of a railroad, but he did point out that large elements in each type of railroad expense, including outlays for direction and management, way and works, locomotive power, and transportation, were independent of traffic, varying with time and with the action of the weather; or, if not altogether independent of traffic, did not vary proportionately to it, as in the case of station expenses, and of that part of the wear and tear of locomotive engines which resulted from the haulage of the weight of cars apart from the weight of their contents.

Practical Suggestions for Railroad Operation

Not only were general principles recognized in the early years of railroad operation, but out of his observations with regard to expenses, Lardner drew in 1850 the following very practical recommendations:

> "1. So to manage the traffic that the various classes of vehicles of transport should carry more complete loads, because the share of the expenses falling on each unit of load diminishes very nearly in the same ratio as the load of such vehicles increases.
>
> 3. So to manage the traffic as to encourage transport to increased distances, because those expenses which are independent of distance will thereby be spread over a greater mileage, that

part of the cost per mile of each object of transport diminishing in the same ratio as the distance transported increases.

3. So to manage the traffic that the number of vehicles drawn by each engine shall be increased, because the cost of traction will thus be divided among a greater number of vehicles. This cost is but slightly increased by the increase of the number of vehicles drawn by each engine, while the expenses falling on each vehicle are diminished in a much larger proportion.

4. So to manage the business of transport that the distance run by each engine loaded shall be increased, because, in this case, those charges on the engine power which are independent of distance are divided among a greater extent of mileage, and the share of those charges falling on each vehicle drawn will be diminished *cæteris paribus* in the same proportion as the engine mileage is increased.

5. In cases where the traffic prevails chiefly in one direction, and consequently, where "empties" are drawn in great quantities in the other direction, to study the local productions and modify the tariff so as to attract loads for the empty vehicles at a tariff which may be productive under such circumstances, though unproductive under ordinary conditions. By these means, the average load of the vehicles of transport will be augmented.

Other less important recommendations related to the limitation of the number of trains run, especially of express trains, the provision for mixed carriage of passengers, instead of carriages designed exclusively for service of the first, second, or third classes, and included the suggestion that traffic so far as possible be segregated according to destination.

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CHAPTER IV

THE HISTORY OF AMERICAN RAILWAYS

Early History of American Railroads

It is not necessary to trace the history of the introduction of railroads into the United States with the same detail with which we have considered the beginnings of railway transportation in England and upon the European continent. So far as knowledge of the possibilities of the steam engine is concerned, the reader may be reminded of the experiments of Oliver Evans in 1804 which were referred to in the previous chapter. In 1820, an engineer named John Stevens constructed a narrow-gauge experimental railway and locomotive upon his own estate in Hoboken, New Jersey. Further information as to the possibilities of steam traction was obtained from a very thorough report upon English practice rendered in 1826 by an American civil engineer named Strickland, who was sent abroad by the Pennsylvania Society for the Promotion of Internal Improvements in the Commonwealth, with instructions to procure a model engine and to collect data with respect to costs and methods of railroad construction. In 1829, one of George Stephenson's locomotives was imported from England and tried, without much success, upon the line of the Delaware and Hudson Railway and Canal Company. It was in October of the same year that the trials of the famous "Rocket" occurred at Rainhill in England, and word of the success of Stephenson's engine soon reached the United States, notably increasing public interest in railway transportation.

Desire of Atlantic Seaboard Cities for Cheap Transportation to the Mississippi Valley

It is evident that prior to 1830 many minds in this country were concerned with the subject of steam locomotion. Perhaps the principal difficulty in 1830 was less that of inventing a workable engine than that of securing capital with which to make experiments upon a large scale. Fortunately this difficulty was soon to be overcome. In Great Britain the fact which attracted practical men to the use of new transportation devices was the pressing need for better communication between the towns of Liverpool and Manchester. In the United States the deciding element was the desire to afford the principal cities of the Atlantic coast facilities for reaching the expanding markets of the Mississippi Valley. This was the influence that caused the construction of the Erie Canal and of the Pennsylvania State Works, and it was this which led to the incorporation of the Baltimore and Ohio Railroad.

Baltimore and Ohio Railroad

Like Philadelphia and New York, Baltimore had at first intended to rely largely upon canal construction for her connection with the West. But by the early part of 1827, men of financial standing in the city had become convinced of two things: first, that the cost of a canal across the mountains would be prohibitive, and, second, that a railroad was practical. A committee of citizens reported in February, 1827, that while the available facts with regard to railroad systems were not as extensive as they desired, they had gleaned from the documents that they examined upon the subject enough to leave no doubt in their minds that these roads were far better adapted to the situation and circumstances of Baltimore than a canal across the mountains would be. The committee, therefore, recommended that measures be taken to construct a double railroad between the city of Baltimore and some suitable point on the Ohio River by the most eligible and direct route, and that a charter to incorporate a company to execute the work be obtained as early as practicable. The Baltimore and Ohio Railroad, organized in conformity with this recommendation, was chartered in February, 1827. Actual construction was begun upon July 4, 1828. The first division of the road from Baltimore to Ohio reached Cumberland in November, 1842, Wheeling, West Virginia, in December, 1852, and St. Louis in 1857. While not the first railroad in the United States, nor even the first railroad upon which a steam locomotive was tried, the beginning of the American railroad system is generally associated with the foundation of this company. It is at least correct to say that the Baltimore and Ohio Railroad was the first railroad of any considerable length designed for the purpose of general passenger and freight traffic between terminals then considered to be widely separated, which was proposed and commenced in the United States; and that the first locomotive which was built in the United States, that of Peter Cooper, was successfully operated upon it on August 28, 1830.

Railroad Construction in the United States 1830 to 1860

Between 1830 and the Civil War, the total mileage in operation in the United States in different years was as follows:

Year	Mileage
1833	380
1835	1,098
1840	2,818
1845	4,633
1850	9,021
1855	18,374
1860	30,626

During this period of thirty years the principal developments in the railroad net of the United States were as follows:

Local Service

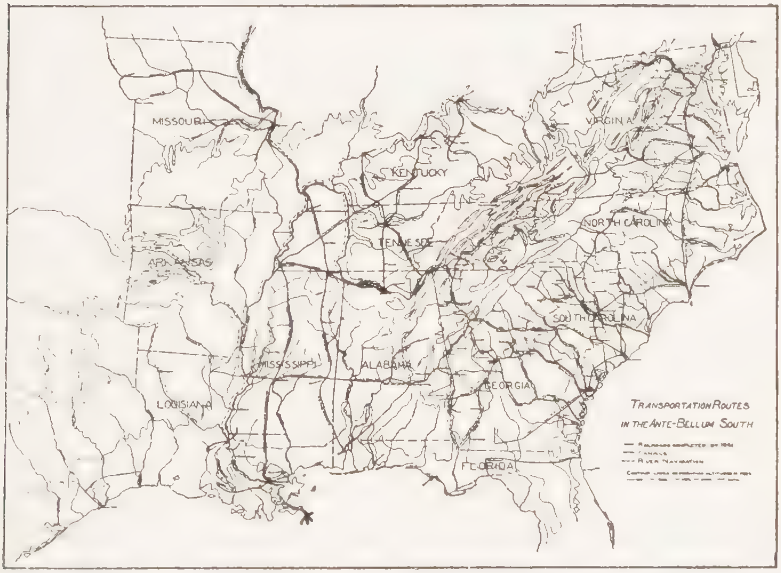
In spite of the fact that the Baltimore and Ohio Railroad was conceived by its promoters as part of a through route, a large proportion of the early American railroads were organized to render local service. Indeed, most railroad transportation, even at the present time, is over short distances, and it was natural that American roads should accommodate local traffic long before they could handle through business over great distances.

The densest rail network in the country before the Civil War lay in New England, where by 1845 there were 710 miles of railroad with terminals in Boston, besides some outlying companies in Massachusetts, Maine, New Hampshire, Vermont, and Connecticut. Of the Boston roads, the most important were the Boston and Lowell to the north, the Boston and Providence to the south, the Boston and Worcester to the west, and the Eastern Railroad to the northeast. The railroads in central New York were also local in purpose, although they eventually combined into an effective through route between Albany and Buffalo. Other local lines were built in eastern Pennsylvania, in New Jersey, and in the states south of the Potomac River, connecting large towns with each other and with the surrounding country. Such, for instance, in the South, were the railroads completed between Richmond and Fredricksburg (1837), between Columbia and Charlotte (1852), and between Atlanta and Montgomery (1853).

Southern States

The beginning of construction in the South was contemporaneous with the building of the Baltimore and Ohio Railroad. Indeed, the Charleston and Hamburg was chartered in December, 1827, and the Baltimore and Ohio only in February of the same year. Construction on the latter railroad was begun in 1828; on the former in 1831. The first 13 miles of the Baltimore and Ohio were opened in 1830, and the first 62 miles of the Charleston and Hamburg in 1832. At the time the Charleston and Hamburg reached Hamburg, 136 miles from Charleston, in 1833, it was the longest railway in the world.

The Charleston and Hamburg Railroad in the South was designed to admit Charleston to the trade of the interior city of Augusta, in competition with Savannah, Georgia. The terminal, Hamburg, was, therefore, located on the Savannah River, opposite Augusta. Parallel with this railroad, but some distance from it to the southwest, lay the Central of Georgia Railroad from Savannah to Macon, which was begun in 1836 and completed in 1843, under the stimulus of Charleston competition. A branch of the Central of Georgia reached Augusta in 1854. These were the first two railroads which were undertaken south of the Potomac. In September, 1845, the Charleston and Hamburg was extended to Atlanta, Georgia, where it was joined a month later by the railroad from Savannah.



TRANSPORTATION ROUTES IN THE ANTE-BELLUM SOUTH [1]

Southern railway construction may perhaps best be regarded as local in character, analogous to projects in the northeast. Yet the railroads from Charleston and Savannah to Atlanta were also the beginning of an east-and-west system which reached, like the trunk lines of the North, from the Atlantic seaboard into the Mississippi Valley. The necessary connection with the Ohio River was accomplished by the building of the Western and Atlantic, begun in 1838 and completed to Chattanooga in 1851. At a later date rails were laid from Chattanooga to Memphis (1856), from Atlanta *via* Montgomery and Meridian to Vicksburg, and from Chattanooga northeast through the mountains to Lynchburg and Richmond, Virginia (1858). These were the most noteworthy through railroads. The northeast-and-southwestern lines, later united into the Seaboard Air Line, the Atlantic Coast Line, and the Southern Railway, which are the outstanding features of our Southeastern railways at the present time, were developed by the consolidation of local lines, most of which were built with very little appreciation of their importance to through movements. The advantages of a connection with the Mississippi Valley were, however, expressly recognized by the east-and-west construction which has been described.

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[1] FROM PHILLIPS, *A History of Transportation in the Eastern Cotton Belt to 1860.* NEW YORK, 1908. REPRODUCED BY PERMISSION OF THE COLUMBIA UNIVERSITY PRESS.

Northeastern Railways

In the territory north of the Ohio and Potomac Rivers, construction prior to the Civil War followed the influences which have been dwelt upon in describing the reasons for the building of the Baltimore and Ohio. Characteristically, the great systems here ran east and west, and while these lines served important local purposes, their greatest significance lay in the access which they afforded centers of population on the Atlantic coast to the fertile valleys of the Mississippi and its tributaries.

Apart from local projects, the principal railroad routes before 1860 in the area bounded by the Atlantic seaboard, the St. Lawrence River, and the Great Lakes upon the east and north, and the Mississippi, Ohio, and Potomac Rivers upon the west and south, with the dates of completion, were as follows:

1842. The Baltimore and Ohio Railroad was completed from Baltimore to Cumberland and the Boston and Albany road from Boston to Albany in this year. The Boston and Albany, originally incorporated as the Western Railroad, was promoted with the conscious intent of securing for Boston a share of the Western trade. It reached the western boundary of Massachusetts in 1841, and in 1842, after the completion of connecting lines out of Albany, it was able to render service from Boston to the Hudson River and, in connection with the Erie Canal and with local lines in New York, to Lake Erie. The Western Railroad was in part financed by the state of Massachusetts.[1]

1851. In the spring of 1851 the Erie Railroad was completed from New York harbor to Dunkirk on Lake Erie. The opening of the Hudson River Railroad between New York and Albany in the fall of the same year gave New York City access to a rail route through central New York which Boston had been using for nine years.

1852. In this year the Pennsylvania Railroad entered Pittsburgh. The Pennsylvania was incorporated in 1846 to provide continuous rail connection with the West in lieu of the combined rail and water facilities of the Pennsylvania State Works. It made use at first of the rail portions of the State Works, including the inclined planes and Portage Railroad over the Alleghenies. The first through cars from Philadelphia to Pittsburgh were run on December 10, 1852.[2]

1853. The opening of a stretch of railroad between Cleveland and Toledo completed continuous rail connection between Buffalo and Chicago.[3] This was the first New York to Chicago line. The same year saw the extension of the Baltimore and Ohio to Wheeling, West Virginia, on the Ohio River, and the incorporation of the New York Central, bringing the separate companies between Albany and Buffalo under a common control.[4]

1857. The Baltimore and Ohio reached St. Louis in 1857.[5]

1858. The western connection of the Pennsylvania Railroad, the Pittsburgh, Fort Wayne, and Chicago, secured entrance to the city of Chicago in 1858, thus opening the route between Philadelphia and Lake Michigan.[1]

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[1] The names of the local lines in New York State, which together afforded through rail connection between Albany and Buffalo, and the dates on which they were opened, are as follows: Mohawk and Hudson (Albany to Schenectady), 1831; Utica and Schenectady, 1836; Tonawanda (Rochester to Batavia), 1837; Auburn and Syracuse, 1838; Syracuse and Utica, 1839; Auburn and Rochester, 1841; Tonawanda (Batavia to Attica), 1842; Attica to Buffalo (the last lap of the through line), 1842. The Hudson River Railroad from New York to east Albany was opened in 1851.

[2] Sipes, *The Pennsylvania Railroad*, Philadelphia, 1875.

[3] *Poor's Manual*, 1868–69. The companies operating between Buffalo and Chicago were the following: Buffalo and State Line; Erie and Northeast; Michigan Central; Michigan Southern; Cleveland and Toledo; and Cleveland, Painesville, and Ashtabula.

[4] *Ibid.* The companies which consolidated into the New York Central system in 1853 were the following: Albany and Schenectady; Schenectady and Troy; Utica and Schenectady; Syracuse and Utica; Syracuse and Utica Direct; Rochester and Syracuse; Buffalo and Lockport; Mohawk Valley, Rochester, Lockport, and Niagara Falls; and Buffalo and Rochester.

[5] Smith, *The Book of the Great Railway Celebrations*, 1857.

The Pittsburgh, Fort Wayne, and Chicago was leased to the Pennsylvania in 1869. During 1858, also, the Canadian Grand Trunk Railway reached Sarnia on the St. Clair River between Lakes Huron and Erie, opening, in connection with railroads across the Michigan peninsula, a new route from the Atlantic seaboard at Portland, Maine, to Chicago.

Most of the east-and-west lines which connected the Atlantic seaboard with the Mississippi Valley prior to the outbreak of the Civil War lay in the Northern states. Whether North or South, however, the construction of such lines made it possible for the distributing centers upon the ocean to sell their manufactured goods in all that range of states which bordered upon the Mississippi and its Eastern tributaries, while at the same time the agricultural products of the West now found an outlet to the east as well as to the south, which was essential to their success. At the same time, though this was not the impelling motive for railroad construction, the closer linking of the East and West produced political and social effects of the first magnitude.

Mississippi Valley

Railroad construction in the Mississippi Valley was naturally less extensive before the Civil War than railroad construction farther east. This was because population was less dense and industry not so far advanced. Apart from the Western extensions of the trunk lines and a series of short railroads connecting the Ohio River with the Great Lakes, the most important work undertaken in the Mississippi Valley before 1860 was, first, the building of the Illinois Central, and, second, the beginning of lines which were eventually to reach out from Chicago and St. Louis to connections with the Missouri River and with the transcontinental railroads operating to the Pacific coast.

The Illinois Central was incorporated in 1851. Its purpose was to develop the interior communities of Illinois by providing them cheap transportation to the Mississippi River. For this end the railroad was planned with one terminus at Cairo at the junction of the Ohio and Mississippi Rivers, and other termini at Galena on the northwest border of the state and at Chicago on Lake Michigan. In order to facilitate construction, Representatives and Senators from Illinois induced the national legislature to grant, in 1850, nearly three million acres of public land to the State of Illinois, land which the State turned over to the railroad company when the latter had received its charter. Similar grants of land were made to the States of Mississippi and Alabama in order to secure political support. The construction of the Illinois Central was begun in December, 1851, and the railroad was formally opened to Cairo in September, 1856.

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[1] Pennsylvania Railroad Company, "Twelfth Annual Report," February 7, 1859.

Finally, westward construction included railroads from St. Louis toward Kansas City, and the beginning outside of Chicago of what later became the Chicago, Burlington, and Quincy, the Chicago, Rock Island, and Pacific, the Chicago and Northwestern, the Chicago, Milwaukee, and St. Paul, and the Chicago and Alton railway systems. The first railway in Illinois from Lake Michigan to the Mississippi was the Chicago and Rock Island, opened in February, 1854. The second, made up of the Galena and Chicago (later part of the Chicago and Northwestern) and of the Illinois Central, was opened early in 1855. The so-called Granger railroads will be considered later in this chapter.

If the reader will consult the preceding pages with the aid of a modern railroad map, he will be able to understand the general trend of railroad construction in the United States during the first thirty years following the successful inauguration of the Baltimore and Ohio. Before passing to the construction of the transcontinental lines to the Pacific coast which were the achievement of the next generation, we may pause to consider some of the similarities and contrasts between the early railroad development in the United States and that in the European countries, including England, which we have previously described.

Early American Railroad Practices the Result of Independent Initiative

To a much greater degree than on the continent of Europe, American practice in railroad construction and operation was the result of independent initiative. This was partly the result of mere distance. It was not so easy to command the services of English engineers in Maryland as it was in Austria or France. Nor were English standards as applicable in the United States as in the more densely settled countries of Europe. Whereas European engineers inclined to a permanent type of construction, American railroads were often best built when most cheaply built, with light rails, sharp curves, and steep grades. Only such roads could expect to earn interest on their investment, in view of the scant population of the country and the pioneer character of many of the early enterprises. It is true that two American engineers were present at the tests at Rainhill, England, and that three English locomotives were immediately ordered after these tests for the Carbondale and Honesdale Railroad (Delaware and Hudson). But these locomotives proved too heavy for the American track and were presently abandoned. English locomotives were also operated upon the Camden and Amboy Railroad in New Jersey, the Newcastle and Frenchtown, and on some other lines, and when somewhat modified to meet local conditions, the English machines gave satisfactory service for many years.

In spite of English precedent and the partial use of English material, the early years of American railroading were marked by continuous experiments, for which lines like the Baltimore and Ohio provided laboratory facilities. It was said of this company in 1835 that its reports had gone forth as a textbook, and that its road and workshops had been a lecture room to thousands who were then practicing and improving upon its experience.

The Charleston and Hamburg and the Baltimore and Ohio both experimented with cars propelled by sails, and with treadmill locomotives operated by horsepower. Upon the Baltimore and Susquehanna two cars were joined together by shafts of timber, and the horses, which were hitched between, were kept from falling by a broad belt of leather passed under their bodies and attached to the shafts. The first use of an American locomotive upon any American railroad was upon the Baltimore and Ohio on August 28, 1830. On January 4, 1831, this same company offered $4,000 for the most approved engine which should be delivered for trial on the road on or before June 1st of the same year. A machine which met all specifications was built at York, Pennsylvania, and entered into regular use following upon the trial.

This, with the locomotive placed upon the Charleston and Hamburg in November, 1830, probably marks the definitive adoption of steam as tractive power upon the American railroad system; while it was also an important step in establishing the independence of the United States with regard to its mechanical railroad equipment.

Mechanical Improvements

The following five improvements associated with early American railroad development deserve mention:

The four-wheel bogie or swivel truck, first placed under the front end of the locomotive and later used in connection with freight and passenger cars;

The spark arrester, made imperative by the fact that the original American locomotives were nearly all wood burners;

The use of equalizing beams, distributing the weight of locomotives equally over the driving wheels in spite of inequalities in the track;

The use of steel springs, first under the locomotives and tenders, and then under freight cars; and

The introduction of eight-wheel cars. Up to 1834, the cars in use upon railroads had only four wheels and were but little larger than a stage coach. By the ingenuity of Ross Winans of the Baltimore and Ohio, large eight-wheel cars were devised and constructed and put upon the road for transportation of passengers. It has been said that in perhaps no other improvement in the operation of railroads was the Baltimore and Ohio more conspicuous even at this early day than in the entire origination and perfection of the eight-wheel car.

Permanent Way

Extensive experiments were also carried out in the fourth and fifth decades of the nineteenth century with respect to the permanent way. Piling, granite blocks, granite sills, broken stone, and longitudinal timbers were all tried as a means of support for the rail; while strap rails, or flat iron bars resting upon timbers, were frequently used before the English edge rail finally demonstrated its superiority. The object sought was durability without so great rigidity as to produce excessive wear upon rolling stock.

Variation in Gauges

There was even less uniformity with regard to gauge in the United States than there had been in England. As a matter of fact, it is extremely difficult to defend any particular spacing of railroad rails as ideally correct. The most important effect of any gauge is that produced upon the design of the locomotive, particularly with respect to the width of the locomotive fire box. But the desirable width of such a fire box itself depends upon the quantity and character of traffic to be hauled, the standard speed, the kind of fuel, the presence or absence of labor-saving devices for supplying fuel to the fire, and upon a number of other things as well. It is not surprising that different American railroad engineers favored different gauges, ranging mostly between four feet eight and one-half inches and six feet. In the end, the advantage of uniformity was seen to outweigh the mechanical gain from the adoption of a non-standard gauge in any special case, and the principal lines adopted gauges which were at least sufficiently similar to permit of the indiscriminate circulation of cars.

State and Local Aid

On the whole, the introduction of railways met with less opposition in the United States than in England, doubtless because the canal and stage interests in this country were less powerful, and the large landowners less influential with the legislature. The new methods of transportation had, of course, to demonstrate their usefulness, as was quite proper, but, except in a few instances, there was no deliberate attempt to handicap them in the interest of some other means of travel.

Indeed, our early railroads secured a considerable amount of state and city support. Among the companies which benefited from this sort of assistance were the Baltimore and Ohio, which received a subscription of $3,500,000 from the State of Maryland and nearly as much ($3,000,000) from the City of Baltimore; the Western Railroad of Massachusetts, which received a loan of $4,000,000 from the State of Massachusetts; and the Richmond and Danville, which was granted perpetual exemption from taxation by the State of Virginia. These were, however, only a few of the companies that were assisted by public bodies in the early history of railroad building. Besides subscribing for stock, lending money, and granting tax exemptions, legislatures sometimes gave banking privileges to railroad companies, as in the case of the Georgia Railroad and Banking Corporation, or even lottery privileges, out of which the railroads were expected to make a substantial profit.

Compared with European nations, the United States from 1830 to 1840 was a small power. Yet by 1838 there were seven states which in the aggregate had borrowed more than $32,000,000 for railroad purposes. These states, with the amount of bonds issued by each, were as follows: Illinois, $7,400,000; Maryland, $5,500,000; Pennsylvania, $4,964,484; Massachusetts, $4,290,000; New York, $3,787,700; Tennessee, $3,730,000; and Alabama, $3,000,000.

No Guarantee of Interest

Probably in most cases the form of assistance afforded early railroads was adopted to suit local convenience at the time when aid seemed necessary. The most striking differences between early American and European practice were, first, the presence of the land grant among the forms of aid granted railroad companies in this country, and, second, the failure of American commonwealths to make use of the device of the guarantee of interest. This last-named expedient had been adopted in France at a comparatively early period, and has more recently received recognition in the United States. The advantage of the guarantee of interest is that it adjusts the assistance rendered precisely to the need of the company which it is desired to subsidize. The disadvantage, in the case particularly of a railroad which proves hopelessly unable to meet its expenses, is that it removes the incentive to economical operation. Guarantees are also said to involve a government in losses arising out of conditions of operation over which the government has no control, but a guarantee of interest is probably no more open to this objection than any other form of state aid to private enterprise.

General Tests to be Applied to Subsidies

The general tests which may be applied to any system of state aid are four: (1) Is the assistance given accurately measured to the need? (2) Is the aid given made available at the moment when help is most necessary? (3) Does the state aid lead to railroad-building which is economically justifiable? and (4) Are the subsidies larger than the communities which offer them can afford?

American practice shows very little attempt to meet tests such as these. What happened was that promoters appealed to public bodies for as much assistance in railroad-building as they thought the temper of the public would support, and that legislatures or city councils gave upon application whatever loose assets they had unpledged, or voted such privileges as they thought might prove of value. The inevitable result of this procedure was that railroads received many gifts which were of comparatively little use to them, because they could not be used directly or sold for cash except at a heavy discount, although, on the other hand, the ultimate burden of these gifts upon the communities affected was very great. Indeed, several states, such as Florida, Tennessee, Michigan, and Minnesota, subsequently repudiated bonds which they had issued in aid of railroad construction. Railroad subsidies were, therefore, often unnecessarily expensive to American governments, especially when privileges were granted, the ultimate value of which was difficult to foresee. The need for railroads in early days was so great, however, that very little mileage was built which did not find some good use.

Government Construction

In some instances state or local governments actually undertook to build railroads. Instances of this sort, besides that of the Pennsylvania State Works, were the Western and Atlantic built by the State of Georgia from Atlanta, Georgia, to Chattanooga, Tennessee; the Michigan Central and Michigan Southern begun and partially completed by the State of Michigan; and a railroad from Meridosia to Springfield, Illinois, constructed by the State of Illinois. The State of North Carolina bought the Raleigh and Gaston Railroad on a foreclosure sale in 1845, but subsequently released it to a private company in 1851. None of these undertakings was profitable, and none of them remained permanently in state control.

Railroad Mileage in the United States 1861-1924

The miles in operation in the United States from 1861 to 1924 have been, at first-year intervals, as follows:

Year	Miles of line in operation[1]
1861	31,286
1865	35,085
1870	52,922
1875	74,096
1880	93,262
1885	128,320
1890	156,404
1895	177,746
1900	192,556
1905	216,974
1910	240,831
1915	257,569
1920	259,941
1924	258,238

A large part of railroad construction after the Civil War served to complete systems and main lines which had already been begun. It must be remembered, however, that the entire framework of the railway systems west of the Mississippi River had still to be laid down.

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[1] *Poor's Manual* prior to 1890; Interstate Commerce Commission thereafter. Circular and unofficial mileage excluded.

Granger Roads

Among the first railways completed after the Civil War were the Granger roads, running from Chicago north and northwest into the grain-growing districts of Illinois, Iowa, and Wisconsin. These carriers afforded connection between the Eastern trunk lines and the transcontinental railways terminating at Omaha and St. Paul. The most important companies in the Granger group were the Chicago and Northwestern, the Chicago, Burlington, and Quincy, the Chicago, Milwaukee, and St. Paul, the Chicago, Rock Island, and Pacific, and the Chicago and Alton. The Chicago and Northwestern reached Council Bluffs, Iowa, in 1867, and the Chicago and Alton was opened to St. Louis in the same year. The second railroad to connect Chicago and Council Bluffs was the Rock Island, opened in June, 1869. The third was the Chicago, Burlington, and Quincy, which reached Burlington, Missouri, in 1867, and Council Bluffs late in 1869. Still another line from Chicago to the Missouri River was that of the Chicago, Milwaukee, and St. Paul, which was organized under the name of the Milwaukee and St. Paul Railway in 1858. It completed the first line opened from Chicago to St. Paul in 1867, and it reached Council Bluffs in the late 'seventies. The company's present name dates from February, 1874.

Transcontinental Railways

Transcontinental railways represent the second great type of railroad construction which followed the Civil War. The agitation for a transcontinental railway dates back at least as far as 1845, but the movement obtained no support until after the discovery of gold in California, and the migration of a considerable population to the Pacific coast.

The dates at which the various through lines to the Pacific coast were opened are as follows:

1869. The Union Pacific Railroad and the Central Pacific Railroad of California met at a point five miles west of Ogden.

1881. The Atchison, Topeka, and Santa Fé, starting at Atchison, Kansas, reached a connection with the Southern Pacific running south from San Francisco and Goshen, California, at Deming, Arizona. This afforded a second through route from the East to San Francisco Bay.

1882. In this year the Southern Pacific made connection with the Texas and Pacific at a point 523 miles west from Fort Worth. The eastern end of the Texas and Pacific in 1882 was at Gouldsboro, opposite New Orleans.

1883. The Galveston, Harrisburg, and San Antonio was completed from Houston to the Rio Grande River near El Paso. The acquisition during the same twelve months of three smaller companies, the Texas and New Orleans, the Louisiana Western, and Morgan's Louisiana and Texas Railroad, connecting Houston and New Orleans, created, together with the Southern Pacific west from El Paso, a new through line from the Gulf to the Pacific coast under a single control.[1]

In the same year the Northern Pacific was opened from Northern Pacific Junction, Minnesota, 23 miles from Duluth, to Wallula Junction, Washington Territory, reaching also by connecting lines St. Paul and Duluth upon the east and Portland and Tacoma upon the west.

1884. The Oregon Railway and Navigation Company, operating a railroad from Portland up the south bank of the Columbia River, connected with the Oregon Short Line Railroad, a subsidiary of the Union Pacific, on November 25, 1884, completing a fifth transcontinental route between the Mississippi River and the Pacific Ocean.[2]

1886. The line of the Canadian Pacific was opened from Montreal to Port Moody on Vancouver Sound on June 28, 1886, and a branch to Vancouver was opened on June 1, 1888.

1893. The Great Northern Railway is, as its name implies, the most northerly transcontinental railroad in the United States. It was completed from St. Paul to Puget Sound (Everett) on January 5, and was opened for traffic on June 18, 1893.

Since 1893 there have been three additional transcontinental lines placed in operation. The first of these was the San Pedro, Los Angeles, and Salt Lake, which began operation from Salt Lake City to Los Angeles on May 1, 1905; the second was the Chicago, Milwaukee, and St. Paul from the Missouri River to Tacoma and Seattle, opened for freight traffic on August 1, 1909; and the third was the Western Pacific, running from San Francisco to Salt Lake City, which began its through business as a freight carrier on December 1, 1909, and regular passenger service on August 22, 1910.

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[1] *Poor's Manual,* 1884, pp. 835–836.

[2] *Ibid.*, p. 916.

Structure of American Railways System Completed by 1893

The completion of the principal transcontinental railway routes by 1893 and the prior connection of these lines with Chicago through the Granger companies, fitted in the last members of the framework of the American railway system as we know it to-day. It is a sufficiently accurate generalization to say that railroad building in the United States since 1893 has been concerned with the filling out of the outlines sketched before that time. This does not mean that later construction has been unimportant. On the contrary, regarded from the point of view of quantity of mileage built, the amount of construction since 1893 has exceeded the construction before that date. But by 1893 the railway net of the United States had assumed a character which it has since retained. Between 1895 and 1905 the increase of railway mileage in the United States was 39,228 miles, or 22 per cent; between 1905 and 1915 it was 40,595 miles, or 19 per cent; and between 1915 and 1925 there was a decrease of 3,221 miles, or 1 per cent.

Future Outlook for New Construction

During the next fifteen or twenty years we are sure to see an expansion of railway facilities. But in all probability this expansion will take the form in the United States of more cars, more numerous and more powerful locomotives, better arranged and more ample terminals, and a larger supply of second, third, and fourth tracks and sidings upon existing routes that pay, rather than that of a substantial increase in main-track mileage. There are few cities in this country of any importance to-day, and few districts which promise to yield large quantities of freight, which are not now served by at least one railway line. Nor are there many railways—possibly none at all—which find in a lack of main-track mileage the limiting factor which prevents an increase in the tonnage which they are prepared to haul. The reason why the existing railway system of the United States finds it difficult from time to time to handle the freight and the passengers which it is called upon to accommodate is primarily that congestion occurs at terminals, and secondly, that motive power in many localities needs to be increased. To remedy such shortages will require the fresh expenditure of billions of dollars of capital, but only occasionally the building of new lines.

Another reason why the next few years are unlikely to witness any considerable change in the framework of the American railroad system is to be found in the rapidly developing use of the automobile and the motor truck. The place of the automobile in our modern transportation system will be discussed in a later chapter. We will content ourselves here by observing that it has already assumed an appreciable portion of the burden that has hitherto rested upon the railroad industry alone, and is probably destined to play a still greater part in the near future. This is likely to lessen the amount of railroad construction as well as to change somewhat the character of the work which railroads are called upon to do.

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CHAPTER V

STREET AND INTERURBAN RAILWAYS

The last three chapters have been concerned with the history of railroads and of inland waterways in this and in foreign countries. Among the other forms of transportation machinery which demand recognition to-day are street and interurban railways—facilities for movements which we shall now consider.

History of the Street Railway

Historically, the street railway began as a tramway, with cars drawn by horses or by stationary engines. It made use of the improvements in roadbed achieved by the inventors of wooden or of iron longitudinal tracks, without waiting for the later introduction of steam power. Railways of this type have been referred to in Chapter III, and there were many instances of them before 1830, both in the United States and in Europe. Most early tramways in the United States were used for the carriage of freight, but abroad the carriage of passengers was perhaps more common.

The first passenger street car in the United States, the John Mason, dates from the third decade of the nineteenth century. It was drawn by horses over strap rails laid on stone ties, through Fourth Avenue, New York City. For some years after the construction of this primitive apparatus, there was little development in street railway service. Between 1850 and 1855, however, half a dozen roads were constructed; 30 in the next five years; over 80 between 1860 and 1870; and at the time of the census of 1890 there were 769 street railways in operation in the leading cities of the country.[1]

Introduction of Cable Cars

When the horse car had established itself as a useful instrument of urban transportation, the next step was to experiment with improved systems of power. The locomotive steam engine was not adapted to city service, so that street railway engineers were unable to avail themselves of experience accumulated in the steam railroad field. But the cable system was introduced in August, 1873, and more than one thousand patents were issued in the United States for cable devices between this time and 1890, when the superiority of electricity had been demonstrated. Cable cars are still used on some streets in San Francisco, and in other places where steep grades require exceptional equipment, but no new equipment of this type is being installed.

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[1] United States Bureau of the Census, *Street and Electric Railways, 1902* (1905).

Experiments With Electric Power

Experiments with electric power began as early as 1847, but for some time had no success. In the late 'sixties, after the commercial exploitation of the magneto-electric and the dynamo-electric generators, the efforts to perfect an electric railway were renewed; and by 1887 the efforts of a number of independent inventors had so advanced the technique of applying electric power that a successful electric street railway was placed in operation in Richmond, Virginia.

The rapid increase in the use of electric power upon street railways in the United States, as well as the growth of street railway and interurban mileage since 1890, is shown by the following table:

STREET RAILWAY TRACKAGE IN THE UNITED STATES, CLASSIFIED ACCORDING TO POWER USED[1]

Miles of track operated by	1890	1902	1907	1912	1917	1922
Electricity	1,262	21,902	34,060	40,808	44,677	43,789
Animals	5,662	259	136	58	11	4
Cable	488	241	61	57	45	46
Steam	711	169	105	76	41	1
Other	.....	6	41	66	61	92
Total	8,123	22,577	34,403	41,065	44,835	43,932

The transition from horse to electric power occurred between 1890 and 1902. In the former year 69.7 per cent of street railway and interurban trackage was operated by horse power. In 1902, horse power was used only on 1.1 per cent of such trackage, while electricity was employed upon 97 per cent.

City v. Interurban Railway

There were two alternatives before the electric-driven street railway when it had reached the stage of technical success. One was to go out into the country and compete directly with steam railroads for passengers and possibly for freight, and the other was to confine itself to city transportation, where it had found its first opportunity and where its advantages were greatest. This choice did not exist so long as the motive power for the street railway was horse or cable, but it presented a problem for the electric railroad manager to decide at least as early as 1902, when electricity had become almost the only power in common use and when improvement in distributive systems had made it possible to transmit power long distances without prohibitive loss.

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[1] United States Bureau of the Census, *Street and Electric Railways, 1907*, p. 23; 1917, p. 24; 1922, p. 18.

The difference between a city and an interurban railway is that the latter connects two or more independent communities, and is organized to carry baggage, mail, express, and miscellaneous freight as well as passengers, while the former serves only a single city, or a city and its suburbs, and carries only passengers and their hand luggage. The interurban differs, on the other hand, from a commercial railway, in that it does not undertake a general bulk and interchange freight business.[1]

In some instances classification is difficult, as a railway may do a local business in a city and also carry passengers from the city to neighboring towns, while the line between suburban and interurban business is especially difficult to draw.

Development of the Interurban

The manner in which interurban railways developed their operating practices between 1900 and 1919 was described in testimony before the Federal Electric Railway Commission in the latter year. Speaking of the early days of interurban operation in Indiana, a witness said:

> " 'Of course, like everything else new, we did not have a broad idea of the possibilities of interurbans when we commenced. They were built cheaply, with lighter rails, smaller cars. We did not think anything about freight, we did not think anything about train dispatchers. We would put a signal with a lever at one switch and a lever at another switch and we stopped and got the train through as best we could.
>
> " 'Then after a while we saw that would not do. So the present system—and I say the present system, for it is practically uniform, the system of operation of interurban roads at this time—was gradually adopted. A train dispatcher was employed and we used the telephones for issuing orders, and we

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[1] Fischer, *Economics of Interurban Railways.*

> have the men take the orders by telephone and repeat them back to the dispatcher, and a record is made and it tends to safety. We put on larger cars, put a compartment in for the smokers and another compartment for the general public and another room for the baggage and express, and then in the forward part a compartment for the motorman. . . . Air compressors are put on the cars so that the air brakes are as complete as on the steam roads. Electric headlights are used; and they run through the country at varying rates of speed, some of them as high as sixty and seventy miles an hour. The fastest train that ever ran on our road we ran from Indianapolis regularly to Connersville, fifty-eight miles, and we made the run in an hour and a half by schedule time, twenty-two minutes of that being taken in getting out four miles to the suburbs of the city.'
>
> "The Chairman: 'How many stops were there on that route?'
>
> "Mr. Henry: 'We made two intervening stops—one to meet the other car running in the opposite direction, and the other at the county seat of Rush County, Rushville. That gives you some idea of the speed at which they can be run.
>
> " 'Now, the old way when we commenced was that we picked up the passengers everywhere; we stopped on hail at a crossroad or an alley, and it did not make any difference which. But that would not work; that took too much time; so we had regular stations adopted, and we got tickets, and finally we organized a traffic association that is the publisher of this map, which covers the territory of Indiana, Ohio, Michigan, part of Pennsylvania, and part of Kentucky; it does not cover Illinois simply because there is no physical connection between the lines in the two states. Under that freight business was built up and regular freight schedules of trains and also freight tariffs filed with the commissions, both the state and interstate, covering the freight rates and the passenger business the same way.' "[1]

The interurban railway is, like other electric railways, in the main a carrier of passengers.

Advantages of the Interurban

The principal advantage which the interurban possesses over the steam-operated railway is the greater frequency of its service, as well as its high average speed. The frequency is made possible by the fact that interurbans can and frequently do run singly instead of in trains. As for speed, the interurban service is not hampered by having to care for low-grade freight. Its cars have a higher rate of acceleration than the steam engine, and so can attain perhaps a higher average speed, although their maximum is certainly not greater than that of the steam lines. The terminals, too, of the interurban are more numerous and therefore more convenient than steam terminals. The advantage of convenience would be still greater if interurbans still operated, as they once threatened to do, in large part upon the public highway. This they no longer do. According to the census of 1922, 25,857 out of the 43,932 miles of electric railway in the United States were laid on public thoroughfares, and the balance only on private right of way. But these figures include all urban surface cars, which by necessity operate for the most part upon the public streets, and separate statistics for interurban properties would tell a different story.

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[1] Federal Electric Railways Commission, pp. 698–699, testimony Henry.

Volume of Business

The interurban railway still handles a substantial volume of business. Indeed in Detroit, Michigan, 70 per cent of shipments from wholesale houses were said, in 1919, to be reaching the surrounding country by interurbans, and second- and third-day deliveries were being made to all points within a radius of 100 and 150 miles. Out of Indianapolis, there was a daily service as far as Fort Wayne (125 miles) and South Bend, Indiana (171 miles).[1] Manufactured goods from the cities moved outward, while stock, fruit, sugar, milk, eggs, etc., were shipped to the city market. This is typical of a great deal of interurban business.

No complaints were made to the Federal Electric Railways Commission in 1919 regarding interurban railway operation. It seems that when the interurbans were first introduced there was some fear lest they might injure small towns to the advantage of large, by encouraging direct buying in the larger places; but experience has shown that even the smaller places are helped by additional transportation facilities, and the fears have died away.

Probable Future of the Interurban

Yet in spite of the real service which interurban railways have rendered and are still rendering in the transportation of passengers and of certain types of freight, it seems unlikely that they will be able to establish themselves as a major transportation agency. In fact, interurban track mileage declined between 1917 and 1922 in the country as a whole, and in more than half of the states that occupied a leading position in the field. The interurban service, with its lighter cars and track, is less comfortable than the main-line railway for journeys of considerable length; and while it is more flexible than the railroad, it is less so than the automobile. Moreover, electric traction is expensive except in areas of dense traffic, and the advantage of frequency of service can be secured either through bus lines or by changes in the character of equipment used upon the railroad. The most productive field for the electric railway is the city, not the country, and it is here that its permanent contribution will be made.

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[1] *Ibid.*, p. 703, testimony Norviel.

Character of City Movements

The chief daily movements within a city consist of morning and evening journeys of clerks, mechanics, laborers, and business men between their homes and places of business, the shopping travel, mostly of women, from residential to retail store districts, the evening travel to theatres, operas, music halls, and other places of amusement, and the short-distance communication between units in the business district. In addition to this is the suburban movement, and the travel of strangers who are passing through or who are visiting the city for business or for social purposes.[1]

Day by day the population of any large city pours into a narrow central district to transact its affairs, and then leaves that district in the evening for rest and recreation and for the enjoyment of family life. Day by day also there is a secondary movement in and out that takes place in the evening hours as a result of various elaborate forms of amusement which the city has to offer.

These currents of traffic are of the city's life. They make it possible for many people during business hours to come into easy contact with others with whom they must communicate. They bring men to material, which is frequently cheaper than bringing material to men. By their location city routes of travel exert profound influence upon the earnings of retail stores and, through these, upon many other industrial locations. Much attention is rightly paid to the relation between passenger movements and land values, and although the subject cannot be examined here, it has become of increasing interest to business men generally as part of the scientific study of business location, as well as to certain groups in particular, including tax-gatherers and distributing agencies.

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[1] Hurd, *Principles of City Land Values*, chap. vii.

Relative Importance of the Street Railway in the City

While the interurban has attained a considerable development, it has never ranked as a major branch of the transportation plant of the United States. On the other hand, the urban street railway surpasses the steam railroad in the number of passengers handled. Moreover, it does not merely compete with the steam railroad, but it performs a service which the latter is not fitted to undertake without radical changes in its organization, and changes in its equipment and in its operating methods.

Characteristics of Street Railway Traffic

The most puzzling operating problems of the street railway arise out of two characteristics of city passenger business. The first of these is that city traffic is extremely dense, and the second is that this traffic is unbalanced. Let us consider briefly these two characteristics and some of their results.

Density

The density of traffic which results when 44,000 miles of electric lines carry 15 billion passengers in the course of a single year is, of course, very great. The surface lines of New York City, which present the extreme case, carried 1,805,560 passengers per mile of track in the course of the year 1922, and the elevated and subway lines, 3,131,611 passengers per mile of track. The corresponding figure for the Pennsylvania Railroad and the New York, New Haven, and Hartford, Eastern railroads which handle exceptionally large numbers of passengers, was 5,343 and 18,176 passengers per mile of track.

Comparisons of this sort lack definiteness because we have little information regarding the average length of haul on electric railway properties. The fact that steam railroad passengers buy tickets for travel between designated stations and that these tickets are subsequently subject to audit in the central railroad offices makes it possible to state exactly the average distance traveled. In 1924 this distance was 38.7 miles for the country as a whole. For the Pennsylvania in 1922 it was 33.82 miles, and for the New Haven, 21.56 miles.

There is nothing comparable to these figures in street railway statistics. However, the statistician for the American Electric Railway Association estimated in 1918 that the average haul on electric railways in this country was 3 miles or less. This is confirmed in a general way by the results of a traffic count taken in Boston in 1917 under the direction of a research assistant in the Massachusetts Institute of Technology. This count was based on inquiry cards given to incoming passengers on a certain day. The investigators secured 5,168 properly filled out cards, and were able to calculate an average length of ride for the group of patrons of 4.1 miles.[1]

It will be observed, however, that the difference between the density of traffic on steam and electric street railways is so great, on the basis of passengers handled, that the difference in length of haul makes little difference in the practical conclusions to be drawn from the figures.

Effect of Rush Hours

The difficulty of handling this dense traffic upon the street railway plant is increased by the concentration which occurs at certain hours of the day. Thus an hourly count upon the Boston Elevated Railway on April 12, 1920, showed that 50 per cent of the day's passengers were carried between the hours of six and nine in the morning and four and seven in the afternoon. In six hours of the day as many passengers were transported as during the remaining eighteen. In Chicago, in 1922, the elevated did about 65 per cent, and the surface lines 53 per cent, of their business during these same hours.[2]

Obstacles to Increase in Street Railway Capacity

It will not do for a street railway to meet the demands upon it merely by increasing the number of its tracks or by purchasing new cars, for it operates within limitations of space. It is, for instance, rarely possible for a company to lay more than two, and almost never more than four, tracks in a city highway, as this would occupy the street to the exclusion of other uses. Moreover, since the maximum demand for transportation comes only during a few hours of the day, the facilities provided would remain unused during most of the twenty-four hours.

Nor is it possible to increase the route speed of cars very greatly, because of the danger to other traffic and because the limiting factors with respect to speed in congested districts are the number of stops and the presence of other traffic.

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[1] Blake and Jackson, *Electric Railway Transportation*, p. 51.

[2] *Ibid.*, pp. 58–59.

Acceleration of Traffic Movements

This problem of capacity is the first one which the operating management of a street railway has to meet. The attempts to render maximum service with a plant of reasonable size express themselves in a number of policies with which users of street railways are more or less familiar.

1. Street railway cars are run at uniform speeds. A car which travels faster than the normal speed upon a track leaves a space behind and requires a free space in front which reduces the number of cars that can be operated upon the track.

2. Cars are built and methods devised to minimize delay in loading and unloading. This, for instance, is the function of low steps, broad platforms, center doors, railings dividing incoming and outgoing passengers, the multiplication of directing signs, pay-as-you-leave instead of pay-as-you-enter systems of taking fares, the use of auxiliary fare collectors, and other devices of these general sorts. The efforts to promote rapid loading are all the more necessary since the abandonment of the almost universal five-cent fare and the increased necessity for making change at the moment of entering the car.

3. Attempts are made to increase journey speeds without increasing the maximum speed of street cars in motion, by reducing the number of stops. Much can also be done by city governments to assist the street car in speeding up its equipment by better regulation of traffic, especially at intersections, and by stringent automobile parking rules.

Practices such as those mentioned in the preceding paragraphs have occupied much of the attention of street railway managers during the past generation, and substantial progress has been made in the technique of handling city traffic. It is becoming increasingly clear, however, that while the street railway, including the elevated and subway lines, is the most effective machine for moving large masses of people in congested areas which has yet been devised, it yet cannot keep pace with the demands of urban population unless some community action is taken to limit the height of buildings, or in some other way to control concentration of business in the downtown districts in large cities. Up to the present time, improvements in local transportation machinery in cities like New York and Chicago have done little more than encourage the further development of business in downtown areas. No street railway plant can expand as rapidly as the demands upon it if these demands are uncontrolled.

Unevenness of City Passenger Traffic

Besides the mere physical problem involved in the successful handling of large masses of people, there are financial questions connected particularly with one characteristic of street railway business which has already been referred to in preceding pages—the unevenness with which traffic offers itself during the day. When 50 per cent of its business is done in six out of twenty-four hours, a large part of the street railway plant is unused a considerable portion of the time.

The following table, taken from Blake and Jackson's treatise on electric railway transportation, shows the use of its cars reported by the Eastern Massachusetts Street Railway on a typical day of 1923.

NUMBER OF HOURS IN WHICH CARS ARE IN SERVICE ON THE EASTERN MASSACHUSETTS STREET RAILWAY[1]

Hours in service	Number of cars	Hours in service	Number of cars
Less than 1	3	12 to 13	17
1 to 2	50	13 to 14	10
2 to 3	38	14 to 15	8
3 to 4	42	15 to 16	4
4 to 5	48	16 to 17	6
5 to 6	37	17 to 18	57
6 to 7	24	18 to 19	130
7 to 8	21	19 to 20	27
8 to 9	8	20 to 21	6
9 to 10	12	21 to 22	2
10 to 11	14	22 to 23	2
11 to 12	15	23 to 24	1

The problem which these figures suggest is not solely one of prompt movement of an irregular traffic; it is also a problem of economy in utilization of plant. Street railways are forced to make a double effort. On the one hand, they must seek business for the hours of light traffic because the fixed charges attributable to this business are negligible, and the work can be done at low cost; and on the other hand, they must strive constantly to adjust variable elements in their service to demand so as to hold down operating expenses.

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[1] Blake and Jackson, *Electric Railway Transportation*, p. 58.

It is for the second of these two reasons that street railway managements are ingenious to devise means for withdrawal of equipment during the slack period of the day. On the other hand, it is for the first reason that street railways are anxious to develop traffic, provided that the new business does not come at the moment of their peak load. This is especially true since the advent of the automobile has cut into street-car revenues. In the long run, the street railway need not fear the competition of the jitney in crowded population areas, because a street car is essentially more economical than an automobile to run, and occupies less space in the street per passenger handled. But the automobile has taken a large part of the pleasure traffic which the street cars formerly enjoyed. The effort of the street railway to encourage off-peak business is not due, however, to the advent of the automobile, but rather to the essential irregularity of the business with which it is concerned.

Credit of Street Railways Should be High

In his analysis of the testimony taken before the Federal Electric Railways Commission in 1919, Delos F. Wilcox states the reasons why the credit of street railway companies should be high. Street railways have enjoyed a monopoly of the most convenient form of local transportation during a period of rapid industrial development and of rapid increase in urban population. Their traffic is comparatively free from fluctuation. Their property is visible and so well known to all. Street railways need little working capital. Their revenues are collected in advance or at the very time when the service is rendered; they have no bad debts, and their current expenses are provided for by their current receipts.[1]

In spite of the advantages which have been mentioned, the recent financial condition of the street railway industry has been so precarious that some discussion of this side of the problem is necessary.

Actual Financial Condition of Street Railways

During the past five or ten years the financial condition of street railway systems in this country has been very bad. A comparison of street railways with steam railroads on the basis of figures of capitalization and dividends in 1922 stands as follows:

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[1] Wilcox, *Analysis of the Electric Railway Problem*, pp. 17–18.

	Electric railways * 1922	Steam railroads † 1922
Total stock outstanding.....	$2,329,173,090.00	$9,140,964,901.00
Per cent of stock yielding dividends....................	39.6 %	59.38%
Amount of dividend declared.	$ 53,662,994.00	$ 338,805,695.00
Average rate on dividend yielding stock............	5.82%	6.37%
Ratio of dividend declared to all stock.................	2.30%	3.78%

* United States Bureau of the Census, *Street and Electric Railways, 1922*, p. 115.

† Interstate Commerce Commission, *Annual Report on the Statistics of Railways in the United States, 1922*, pp. xxxii, xxxiii. The amount of railroad stock stated in the table as "outstanding" ($9,140,964,901.00) is slightly greater than the total for which the Interstate Commerce Commission presents statistics of dividends declared. The difference is not material, but the careful reader may be warned that the ratios and percentages in the table, as well as the amount of dividends declared, have reference to the smaller capitalization concerning which the Commission is able to publish full information, and not to the full amount of outstanding stock.

The fact that the ratio of dividends declared to all street railway stock outstanding is only a little over 2 per cent is not conclusive evidence of low earning power, in the absence of information concerning actual investment in electric railway properties; but there is reason to inquire into the condition of a great industry which reports dividends of only 2 per cent upon its outstanding stock.

Additional light is thrown upon the condition of street railways in this country by an examination of the course of prices of street railway securities in the course of the last twenty-five years. In the diagram which is reproduced on the following page there is shown the yields of a selected list of twenty-five street railway bonds at half yearly periods, between 1902 and 1927, inclusive.[1]

Examination of the above diagram will show that street railway bonds enjoyed a high credit during the early years of the twentieth century. This credit was somewhat impaired between 1902 and 1917, and then, between 1917 and 1923, there occurred a collapse which has been paralleled in no other industry of comparable size in the United States. At the extreme point, the average yield of street railway bonds, which had begun at 4.4 per cent in 1902, rose to 13 per cent, with individual instances of still higher returns. The yield fell after 1921 to more normal figures, although it still stands at more than 6 per cent, or nearly half again as high as the yield in January, 1902.

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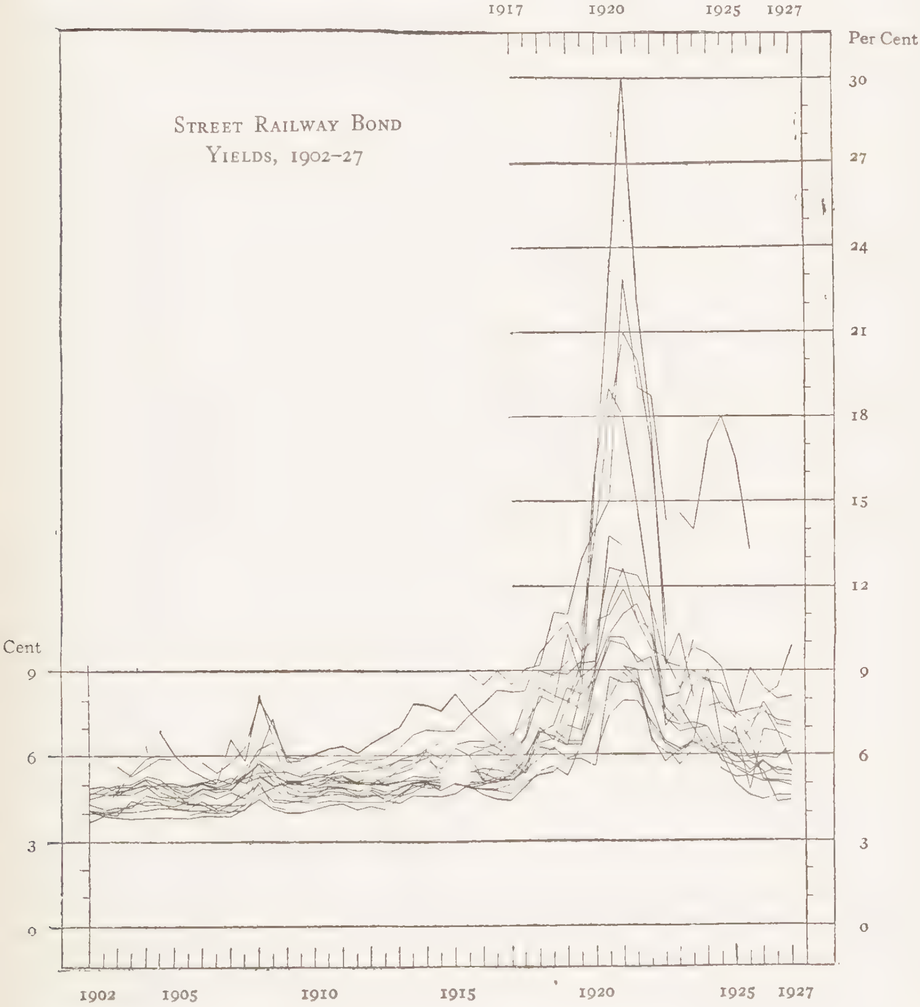
[1] The yields of street railway securities are calculated by the author and include the following issues: West End debenture 4s, 1914 (1902); West End debenture 4s, 1932 (1903-27); Connecticut Ry. & Ltg. 4½s, 1951 (1902-27); B. R. T. 5s, 1945 (1902-27); B. R. T. 4s, 2002 (1903-27); Aurora, Elgin & G. 5s, 1941 (1903-27); Metropolitan West Side 4s, 1938 (1902-27); Northwestern El. 4s, 1911 (1902-04); South Side El. 4½s, 1907, 1924 (1903-24); Denver City Tramway 5s, 1933 (1902-25); Detroit U. 4½s, 1932 (1902-27); Duluth St. Ry. 5s, 1930 (1902-27); Los Angeles 5s, 1938 (1902-27); Louisville Ry. 5s, 1930 (1902-27); N. O. Ry. & Ltg. 4½s, 1935 (1905-23); N. O. Ry. 4½s, 1952 (1903-05); Interborough Metro. 4½s, 1956 (1906-09); Metropol. St. Ry. 4s, 2002 (1903-05); Interborough Rapid Transit 5s, 1966 (1914-27); Interborough Rapid Transit 5s, 1952 (1910-13); Phila. Rapid Transit 5s, 1957 (1909-27); Market St. El. 4s, 1955 (1905-09); United Rys. of St. Louis 4s, 1934 (1902-27); Denver Tramway 5s, 1950 (1926-27); M. O. Public Service Corp. 5s, 1952 (1924-27).



Street Railway Receiverships

The collapse of street railway credit after 1917 was naturally accompanied by a sensational increase in the number of receiverships. The financial history of this episode may be summarized in the following table:

ELECTRIC RAILWAY RECEIVERSHIPS [1]

Year	Number of companies	Miles of single track	Stock	Bonds
1909	22	558.00	$ 29,962,200	$ 22,325,000
1910	11	696.61	12,629,400	75,490,735
1911	19	518.90	29,533,450	38,973,293
1912	26	373.58	20,410,700	11,133,800
1913	18	342.84	31,006,900	47,272,200
1914	10	362.39	35,562,550	19,050,460
1915	27	1,152.10	40,298,050	39,372,375
1916	15	359.26	14,476,600	10,849,200
1917	21	1,177.32	33,918,725	33,778,400
1918	29	2,017.61	92,130,388	163,257,102
1919	48	3,781.12	321,259,354	312,915,104
1920	19	1,065.31	28,758,455	72,283,575
1921	19	986.42	32,909,525	36,177,800
1922	14	695.43	18,140,150	20,304,400
1923	12	333.63	8,332,100	14,707,066
1924	12	1,021.88	28,489,700	35,716,000
1925	14	1,260.07	51,383,195	54,696,525
1926	16	1,228.28	17,769,435	117,560,073

The rise in receiverships in the years 1917, 1918, and 1919 will be noted. In 1917, 1,177 miles were placed in receivers' hands; in 1918, 2,018 miles; and in 1919, 3,781 miles. In 1920, the figure of new receiverships had again fallen to 1,000 miles, and since that time the situation has still further improved, although with some recrudescence of trouble in 1924 and 1925. Nearly half (590 miles) of the mileage placed in receivers' hands in 1926 consisted of the tracks of the Chicago Railways. This was a voluntary receivership to conserve property at the expiration of a franchise, not a failure due to insufficient income. It was not, therefore, an instance of financial strain in the same sense as were the failures which preceded it.

Causes of the Collapse of Street Railway Credit

So dramatic a financial breakdown of a great transportation agency requires some words of explanation. One cause may be found in the reckless management, especially financial management, which characterized many street railway projects in their early days. This took the form of overbuilding, improper dividend policies, overvaluation of assets, free issue of bonus stock, and other practices familiar to students of the pathology of corporation finance.

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[1] *Electric Railway Journal,* January 1, 1927, p. 40.

A further heavy burden upon street railway finances has been the high rate of obsolescence of street railway properties. This in turn has been the result of rapid improvements in technique, which have in some instances compelled the rebuilding or reëquipping of street railways several times in the course of a comparatively few years. An additional factor in obsolescence has been a public demand for improved service, that has compelled heavy expenditures in remodeling and increasing plant and equipment—expenditures which have not in all cases produced increases in revenues to correspond.

A third annoyance to the street railway has been the competition of the automobile. A traffic count in the city of St. Louis in 1925 showed the following distribution of passengers between street cars, private automobiles, buses, and jitneys:

SUMMARY OF TRAFFIC COUNT IN AND OUT OF BUSINESS DISTRICT, ST. LOUIS, MO., 1925, ENTIRE BUSINESS DAY (7 A. M. TO 6 P. M. BOTH IN AND OUT)

	Vehicles		Passengers		Passengers per vehicle
	Number	Per cent of total	Number	Per cent of total	
Street cars	9,645	9.6	308,779	62.8	32.1
Private automobiles	87,700	87.2	142,759	29.0	1.6
Buses	1,976	2.0	36,233	7.4	18.3
Service cars *	1,208	1.2	3,913	0.8	3.2
Total	100,529	100.0	491,684	100.0	4.9
Commercial vehicles	37,837	.....	50,893	.....	1.3
Total	138,366	.....	542,577	....	3.9

During the entire day, from 7 A.M. to 6 P.M., motor vehicles of one type or another carried 37.2 per cent of the passengers entering or leaving the business district. During the rush hours the proportion fell to 27.6 per cent, and between the hours of 10 A.M. and 4 P.M. it rose to 44.8 per cent, but at all times it was a substantial proportion of the total traffic.

In Los Angeles, also, in 1925, a check made of all traffic crossing the streets bounding the congested or metropolitan district between

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* Service cars are 25-cent jitneys. *Electric Railway Journal*, October 10, 1925, p. 615.

the hours of 6 A.M. and 7 P.M. on a normal weekday gave similar results,[1] and common observation is sufficient to establish the fact that conditions in the two cities mentioned are reproduced, in varying measure, in other large centers of population.

While we cannot be sure that all of the passengers carried in motor vehicles would use the street cars if no automobiles or motor buses were available, it is safe to assume that a large portion of them would travel in the cars, and that the competition of the automobile results in a large loss in revenue to the street railway lines.

Increase in Prices

Important as bad management, obsolescence, and motor competition have been in weakening the general position of street railway companies, they do not account for the suddenness with which confidence in street railways as investments has been destroyed. There is little question but that the recent unfortunate experience of the street railways of the country is connected with the war. It represents the effect of increases in wages and prices in an industry with little reserve strength, which could not readily increase its own prices to the public.

A representative of the Westinghouse Electric Manufacturing Company testified before the Federal Electric Railways Commission in 1919 that the percentage increase in the prices of a list of specified articles largely used by electric railways had been, between the middle of 1915 and June, 1919, as follows:

> Railway motors and car equipment, approximately 87 per cent increase;
> Locomotives, approximately 87 per cent increase;
> Rotary converters, approximately 75 per cent increase;
> Transformers, approximately 70 per cent increase;
> Switchboards, 100 per cent increase;
> Motor generator sets, 95 per cent increase;
> Turbines, 100 per cent increase.[2]

This testimony conforms reasonably closely to data published by the *Electric Railway Journal*, showing that the cost of electric railway operating materials valued at $100 in 1913 was, in 1916, $126; in 1919, $172.2; and in 1920, $224.6.[3] It is likewise in harmony with the index of wholesale prices published by the United States Department of Labor, and with the known trend of costs during the war in almost every line.

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[1] *Ibid.*, p. 618.

[2] Federal Electric Railways Commission, p. 393.

[3] *Electric Railway Journal*, January 1, 1927, p. 29.

Increase in Wages

The available data regarding wages paid by electric railway companies indicates that changes were important in this field as well as in the field of prices. According to the census of 1922, the average annual wage paid conductors, motormen, one-man car, and bus operators was $655 in 1907, $726 in 1912, $934 in 1917, and $1,571 in 1922. Relating this to the amount of business done, this becomes $.99 per hundred passengers in 1912, $1.12 in 1917, and $1.62 in 1922. The ratio of increase for other wage-earners employed by electric railways was somewhat greater than this during the same years, and that for salaried employees about the same. Street railway companies objected to demands for increased wages on the ground that they could not afford to pay a higher scale, but the National War Labor Board decided that it would not be fair, in determining wages, to take into account the financial condition of the employer, and this point of view has generally been accepted.

The increase in wages and prices in the street railway industry could not be met immediately by an increase in fares, partly because public opinion opposed a change from the customary five-cent fare, and partly because the five-cent rate had become embodied in a large number of street railway charters and could not, therefore, be altered without municipal consent. These charter agreements had been freely concluded at a time when street railway managers believed the five-cent rate to be so profitable that they were anxious to perpetuate it. They proved disastrous when costs increased. This is the fourth, and probably the most important, of the causes for the decline in street railway credit.

Attempts to Restore Street Railway Credit: Abandonment of the Five-cent Fare

As late as 1917, the basic five-cent fare was general throughout the United States. During the next five years, however, the practice changed, until, in 1922, the situation was as follows: [1]

New England, in 1922, showed the greatest number of ten-cent fares, while the Pacific coast clung persistently to fares of five and six cents. Reduced to an index number, the average street railway

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[1] Census of 1922, *sup. cit.*, p. 91.

Basic rate of fare (Cents)	Municipalities having 8,000 to 50,000 inhabitants	Municipalities having 50,000 or more inhabitants	Total
5	117	21	138
6	55	25	80
7	93	36	129
8	43	33	76
9	6	1	7
10	59	25	84

fare was 100 in 1913, 106.2 in 1918, 120.7 in 1919, 137.2 in 1920, 148.9 in 1921, 146.0 in 1922, 142.9 in 1923, 145.2 in 1924, 150.2 in 1925, and 151.7 in 1926.[1]

Do Increases in Fares Bring Increases in Revenues?

There is always question in an individual case whether an increase in fare will increase revenues, or whether it will not have this effect. In Boston, Massachusetts, street railway fares were increased from five cents on July 31, 1918, to seven cents on August 1, 1918, eight cents on December 1, 1918, and ten cents on July 10, 1919,[2] or increases of 40, 60, and 100 per cent. The increases in revenues were 12 to 21 per cent, 36 to 46 per cent, and 60 per cent in different months following these advances, the figure of 60 per cent being calculated on the basis of the first few days after the introduction of the ten-cent fare.

In other cities, the results have been sometimes more and sometimes less favorable to the street railway companies. Thus in Scranton, Pennsylvania, in 1918, a 20-per-cent increase in fare, from five to six cents, produced a 12-to-13-per-cent gain in revenue.[3]

In Cincinnati, a percentage increase in revenue closely approximated a similar percentage increase in rates.[4] On the Connecticut Railways in 1917, an increase in fares from five to six cents brought almost no additional return.

The Federal Electric Railways Commission made a special effort to inform itself concerning the effects of fare increases between 1917 and 1919, and obtained some interesting results, embodied in the following table:

It seems likely that fare increases in the cases tabulated exerted a restraining influence on the number of revenue passengers moved.

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[1] *Electric Railway Journal*, January 1, 1927, p. 29.

[2] Federal Electric Railways Commission, p. 963, testimony Conway.

[3] *Ibid.*, p. 366, testimony Tingley.

[4] *Ibid.*, p. 477, testimony Culkins.

COMPARATIVE STUDY OF PASSENGER REVENUES IN RELATION TO FARE INCREASES UPON THE PRINCIPAL STREET RAILWAY SYSTEMS OF THE UNITED STATES, AS REPORTED FOR THE FIRST NINE MONTHS OF 1917 AND THE FIRST NINE MONTHS OF 1919

	Increase in average fare 1917–1919 (Per cent)	Increase in number of revenue passengers 1917–1919 (Per cent)	Increase in passenger earnings 1917–1919 (Per cent)
Cities or systems where there was no increase in average fare paid, or where the increase was less than 3 per cent (13 systems)	0.41	15.08	15.65
Cities or systems where the increase in the average fare paid was between 3 per cent and 10 per cent (11 systems)	6.63	10.73	18.11
Cities or systems where the increase in the average fare paid was between 10 per cent and 25 per cent (30 systems)	17.80	6.65	25.63
Cities or systems where the increase in the average fare paid was more than 25 per cent (15 systems)	41.77	D 7.54 *	30.97

* Decline. Figures from Wilcox, *Electric Railway Problem*, pp. 205–210.

On the other hand, the percentage increase in revenue in all cases save the last exceeded the percentage increase in fare, although part of the gain was doubtless due to a normal growth in business independent of fares. The most reasonable conclusion from all the evidence is that increases in fares bring some, though not proportional, increases in revenue, while there are wide variations in individual cases. Doubtless the length of haul, the presence or absence of other forms of transportation, and the opinion of the community as to whether the advance is justified have an influence upon the results.

Service-at-Cost Franchises

A further interesting attempt to assure an adequate return to street railway companies is contained in the so-called service-at-cost franchise. The essential elements of a service-at-cost franchise are, first, a valuation; second, an agreement upon a rate of return; third, an equalization fund; and fourth, a sliding scale of fares adjusted to cover costs of operation, and to provide, in addition, sufficient revenue to pay the agreed return upon the established valuation.

Generally speaking, service-at-cost franchises have terms of twenty years or more, or they may even take an indeterminate form, subject to provision for purchase by the city at any time on reasonable notice.[1]

Cleveland

A service-at-cost franchise of the sort just outlined was introduced in the city of Cleveland, Ohio, in the latter part of 1910. The general plan here began with the erection of a so-called reserve fund, through an initial contribution of $500,000 by the street railway company. All subsequent company earnings were credited to this fund. Out of the fund, on the other hand, were paid all expenses of maintenance and operation up to a limit per car mile set in the ordinance itself, insurance, taxes, and 6 per cent on a valuation of the street railway company.[2]

The same ordinance which established the reserve fund set up a schedule of fares in a series of gradations. The fares charged when the plan was first put into effect were three cents, with one cent for transfers. Whenever the sum in the reserve fund rose to $750,000, by excess of receipts over expenses, the fares dropped a grade; whenever it fell to $250,000, the fares automatically rose to the next higher grade. In this way, the fares, in the long run, were expected always to cover expenses, while the limitation of outlay per car mile protected the public against extravagance and inefficiency on the part of the company.[3]

Influence of the Street Railroad Commissioner

Under the Cleveland plan, the mayor and council were assisted by a city street railroad commissioner, who was, by the terms of the ordinance, the technical adviser of the mayor and council. The relations between the company and the city were handled by the council and the mayor on the one side, and by the company on the other side. The commissioner, however, had an office in the offices of the company, all accounts and books were open to his inspection, and he reported regularly to the mayor and council whatever he thought worth reporting.[1]

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[1] Federal Electric Railways Commission, pp. 467 ff., testimony Nash.

[2] Federal Electric Railways Commission, p. 590, testimony Stanley; p. 1,001, testimony Baker.

[3] The Cleveland ordinance was amended in detail in April, 1926. The new franchise contemplated a variation in the reserve fund between $500,000 and $1,100,000 instead of between $250,000 and $750,000; the maximum permissible fare was set at ten cents instead of six cents, and the company was allowed to pay 2 per cent commission on stock sales. The fundamental basis of the arrangement remained, however, as before (*Electric Railway Journal*, May 1, 1926, p. 771).

In actual practice, the influence of the street railroad commissioner in Cleveland has always been, naturally, great. For one thing, the ordinance places upon him the responsibility of recommending to the council changes in the car mile limitations to operating and maintenance expenses, up or down. This gives him control over the outlays of the company. Again, the company is not permitted to spend money for improvements or betterments, or even for renewals and replacements, without the consent of the city; if it wants to buy one hundred cars it has to present to the street railroad commissioner the kind of cars it wants to buy, the cost of the cars, and the times of delivery. The Commissioner then advises the council, and a resolution is passed authorizing the purchase of these one hundred cars.

In case of dispute between the company and the city, the question at issue is referred to arbitrators, one of whom is chosen by the company, one by the city, and one by the district federal judge or circuit judge of the community.

Cincinnati

A service-at-cost franchise similar to that in Cleveland was adopted in Cincinnati in 1918. As revised in 1925, the maximum of the interest or reserve fund was set at $600,000, and the minimum at $200,000, and the franchise called for automatic decreases or increases of not less than one-half cent nor more than one cent in the fare when the maximum or minimum was attained.[2] The fare control fund in this instance was fed, first, by a company contribution of $400,000 raised by the sale of securities, and then by the excess of gross receipts over operating expenses, taxes, fixed charges, and return on capital. The return on capital consisted of 5 per cent a year for the first three years and 6 per cent thereafter on a capital stock specified in the franchise. Interest on bonds was taken care of under fixed charges, with the proviso that all future security issues must be approved by the director.

In Cincinnati, the supervising official was called a "director." Questions of extensions and further franchises were vested in the city council, but the council was required to refer these matters to the director for report and recommendation before it took action. In general, the city determined through the director the number of cars and the kind of cars which were to be run, their frequency, where the cars should stop, and where transfers were to be given; and in the matter of extensions the city reserved the right to order extension wherever it saw fit. Cincinnati did not adopt the Cleveland plan of a car mileage allowance, but it required the street railway company to file with the director, on or before December 1st of each year, a budget of operating expenses classified according to the Interstate Commerce Commission's system, and this budget, when approved, was held to, unless modified by company request for a supplementary budget, a request which the director might allow or disallow.

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[1] Federal Electric Railways Commission, pp. 1,000–1, testimony Baker.

[2] Federal Electric Railways Commission, pp. 472–475, testimony Culkins; *Electric Railway Journal*, November 7, 1925, p. 812.

Sliding Scale of Profit

An interesting feature of the original Cincinnati plan of 1918 was the sliding scale of profit allowed the street railway company. Thus, when fares were more than six cents, all of the surplus after paying costs of service went into the reserve fund. When the fares were six cents, the company was permitted to retain 20 per cent of the surplus, 80 per cent going into the reserve fund. When fares fell to five and one-half cents, the company retained 30 per cent, and when they were five cents or less, the company retained 45 per cent. The fact that company profits increased as fares fell was expected to provide an incentive to economical operation. The new franchise of 1925 did not retain this provision for a sliding scale of profits, but it established instead a capital-stock retirement fund into which any excess in the fare control fund over the sum of $400,000 might be paid, when recommended by the director, provided that such payment in any single year should not exceed $300,000. Reduction in the outstanding capital stock, of course, had the effect of reducing the valuation upon which 6 per cent was to be allowed.

Advantages of Service-at-Cost Franchises

The service-at-cost franchise seemed after 1910 to offer a way of escape out of an extremely difficult situation, and several American cities besides those named voted franchises of this description. Experience has, however, somewhat modified the expectations at first entertained. The great advantage of the system seems to be that it places the street railway system of a city so entirely under the control of municipal authorities that there is no longer ground for suspecting it of malpractice or extortion. This lessens the opposition to increases in fares—a great advantage at a time when advances in fares are imperative, as they were in 1919. Moreover, by offering the promise of a fair return to the investor, the cost-of-service franchise stabilizes the prices of street railway securities and lowers the cost of money for street railway purposes.

Disadvantages of Service-at-Cost Franchises

On the other hand, the service-at-cost franchise has obvious defects. The agreed rate of return to the company may be made impossible because of city limitation upon operating and maintenance expenses. The company, on its side, may slight its maintenance unless the ordinance is drawn with great care. When it comes to extensions, the company is apt to hesitate to build into sparsely settled territory. Again, there is no incentive to economy in charters like the Cleveland one, so that the rôle of management may easily degenerate into mere routine. When this happens, municipal ownership would seem to be a preferable arrangement. Individual charters have been criticized upon the ground that they made no allowance for depreciation, that the rate of return which they allowed was too low, and that the implied promise of a reasonable revenue could not be kept by advancing rates, because advance in rates diverted business and decreased rather than increased revenue.

Adoption and Rejection of Service-at-Cost Plans

Service-at-cost plans have been adopted in Cleveland and in Cincinnati. Besides these two cities, the idea has been used, in one form or another, in Dallas, Montreal, Memphis, and in Rochester, New York. In Massachusetts a variant plan has been applied to the Boston Elevated and the Bay State street railway systems, and proposals involving service-at-cost have been recently under discussion in Chicago, Buffalo, St. Louis, and Kansas City. On the other hand, the plan has been at one time or another defeated by popular vote in Chicago, Milwaukee, Denver, and Minneapolis, and has been rejected by the city council in Syracuse.

Municipal Ownership

In 1912, the only municipal railways in the United States were those of Monroe, Louisiana, and San Francisco, California. In

1917, the number of roads of this character had increased to eight, and in 1922, to sixteen, with a total mileage of 793.83 miles of track.[1] There is one state railroad, in Bismarck, North Dakota, reporting 1.12 miles of track.[2] The most important municipal systems are those in Detroit, Seattle, and San Francisco.

It is evident from these figures that municipal ownership has made little headway in the United States. This is in sharp contrast with England, where the majority of street railways are the property of the towns in which they operate.

Arguments For

There are reasons in the nature of the business why the street railway is an appropriate subject for municipal management. One reason is that the geographical limitations under which street railways work make competition wasteful and coördination of effort more than ordinarily important in their case. Another is that municipalities are more immediately and directly affected by street railway policies than they are by policies pursued in most other lines of business. This may be expressed by the phrase that local transportation is a social and not only a business problem. It may well follow from this that the city must operate its street railways if it is to shape its development along the lines which its citizens think wise. If one adds to these positive reasons the negative ones that the operation of a street railway is in many ways a routine affair, and that the users of its service are in a position to judge easily and accurately whether the service is good or bad, there is basis for a strong argument in favor of municipal operation.

Arguments Against

The principal objections in principle to municipal operation are that it is dangerous to place so large a payroll under the control of political officers, that the quality of the executive officers is likely to be lower under public than under private management, that reductions in fare and unprofitable extensions will be made to curry favor with voters, and that the cost of the service will be concealed by improper transfer of expenses to general administration.

As in most cases involving economic policies, the decision for or against municipal ownership in a particular city will ordinarily depend upon local conditions. The Federal Electric Railways Commission reported upon this subject:[1]

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[1] Census of 1922, *sup. cit.*, p. 236.

[2] The Boston Elevated Railway is managed by trustees appointed by the Governor of Massachusetts.

> "Some members of the Commission individually feel that eventually municipal ownership might prove generally desirable and that there may, perhaps, be communities in the United States in which on account of the responsibility of the local government and the acuteness of the present conditions, municipal ownership should be resorted to. . . . The Commission is unanimous on this point: that there has not been sufficient experience with public ownership and operation of street railways in this country to enable us to recommend it as a permanent solution of this problem."

The Future of Street Railways

L. F. Loree, president of the Delaware and Hudson Railroad, only recently aroused resentful comment from the street railway industry by telling the Chamber of Commerce of St. Louis in April, 1926, that the country could wipe off the books the six thousand million dollars invested in electric street and interurban railroads, because the automobile, truck, and motor-bus had placed them in the discard as effectively as the steam railroad shelved the stage-coach and stage-coach tavern during the last century. Likewise, John Bauer, one-time public utility consultant to the corporation counsel of New York, is quoted as saying that he cannot see an economic life of more than twenty years at the outside for the surface street car in large cities.

It is important to arrive at some conclusion regarding the future of street railways because there are questions of immediate policy which require an estimate of future development for their proper handling. It appeared, for instance, from a survey completed late in 1925, that out of 82,450 street railway cars in the United States, 34 per cent, or approximately 28,000, are twenty, and 54 per cent fifteen or more years old. Twenty years is a reasonable life for a street railway car, but apart from this, the progress in car design since 1907 has been sufficient to render obsolete equipment constructed before that time.[2] Is it desirable to replace 28,000 street cars at an average cost which may easily exceed $10,000, or should the occasion be taken to withdraw a portion of its invested capital from street railway enterprise?

What should be said, also, regarding service-at-cost contracts? Certainly under a service-at-cost arrangement, the public assumes a greater responsibility for the financial success of a street railway than under a franchise of a more usual type. Is this conclusive against service-at-cost franchises, or may the public safely undertake a more or less formal guarantee of the solvency of street railway enterprises? What is the lesson, finally, with respect to municipal ownership?

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[1] Federal Electric Railways Commission, p. 2,288.

[2] *Electric Railway Journal*, January 2, 1926, p. 25; November 14, 1925, p. 853.

Street Railway Situation Still Unstable

Undoubtedly the street railway situation is still unstable. During the past three or four years the net revenues earned by city carriers have advanced, but at a declining rate; the ratio of earnings to fixed charges has become less favorable; new bonds and notes have been negligible in amount and have been issued at high rates; car orders are much below pre-war figures and, on the whole, have declined since 1923; and street railway mileage placed in receivers' hands has shown a tendency to increase.

On the other hand, there is some basis for optimism in the situation. For one thing, the reorganization of companies which failed after 1915 is steadily progressing. The construction of new track proceeds moderately, relations with the public are improved, and fares are higher than ever in street railway history, although expenses have declined since 1920. There is yet no satisfying evidence that the space-occupying automobile will dominate the city streets, nor that the highway will provide as good a bearing surface as the rail where mass movements of passengers are concerned.

The situation is too critical to permit of dogmatic assertion, and this chapter will close with a summary statement of the policy which leading representatives of the street railway industry believe to be essential to the salvation of their business. This policy includes the following four heads:

1. The rendering of full and complete transportation service by all dependable and popular conveyances. This will include not only electric cars, buses, and trackless trolleys, but such other conveyances as may be invented in future years.

2. The modernization of equipment. The car is referred to as the show window of the industry, and improvements in design and comfort are regarded as of great importance. Attractive body lines, adequate lighting, proper heating and ventilation, wide doors and low steps, are details mentioned in this connection.[1]

3. Reorganization of the financial structure of individual com-

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[1] *Electric Railway Journal*, October 10, 1925, p. 604.

panies which cannot raise the necessary funds for extensions or betterments, or which have maturing obligations which cannot be economically met.[1]

4. Cultivation of public relations through public speaking, advertising, and publicity.[2]

A policy such as that outlined in the preceding paragraphs will not maintain a street railway industry which has no essential service to perform, but it is well calculated to strengthen a sound business in a period of temporary depression, and to place it on the way to eventual prosperity. That the street railway is a business of the latter type one may still be permitted to believe.

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[1] *Ibid.*, October 10, 1925, p. 609.

[2] *Ibid.*, July 4, 1925, p. 7.

CHAPTER VI

HIGHWAY TRANSPORTATION

Roads

The road system of a modern state antedates its railroads, and perhaps even its inland waterways, for some form of smoothed way over the land is necessary in the early stages of industrial development. The primitive network of local trails and wagon routes can, however, be neglected in our present study, as can also the more ambitious project for a federal highway from Cumberland, Maryland, to St. Louis, which was undertaken in 1811 and continued more or less actively till 1840, until construction had reached the Indiana line. In general, road construction has been retarded in this country by the excellence of railway service. What was accomplished prior to 1891 was at the expense of local government units.

State Participation in Road Building

In 1891, the State of New Jersey passed a law providing for a certain measure of state participation in road building. A state highway department was established. Local authorities were permitted to invite the aid of the state, and if they did so the state undertook to develop plans and specifications, to inspect and supervise road construction, and to pay one-third of the cost. This policy, initiated by New Jersey, was followed by other states in one form or another, until by 1917 all of the forty-eight states had enacted state-aid highway laws. Thirty-two states now provide full state control over the construction and maintenance of main state roads built entirely or largely at state expense. Other states have not gone so far, but most provide compulsory supervision over the construction of aided roads, and appropriate state revenues to pay a portion of the cost of construction.

The reëntry of the federal government into the highway field dates from the so called Federal-aid Road Act of 1916, supplemented by the Federal Highway Act of 1921.

Federal-aid Road Act, 1916

The first of these laws authorized the Secretary of Agriculture to participate in the improvement of post roads up to 50 per cent of the cost of improvement. Federal aid was to be limited by the appropriation provided, and in no case was to exceed $10,000 per mile, exclusive of the cost of bridges more than twenty feet long. States desiring to receive federal aid were each required to create a state highway department adequate in authority and equipment to coöperate with the federal government, and to assume responsibility for the immediate supervision of construction. This last provision was intended to emphasize the importance of state participation in highway work.

Federal Highway Act, 1921

The second law, that of 1921, authorized the Secretary of Agriculture, in coöperation with state highway departments, to designate a system of main interstate and intercounty highways, limited in each state to 7 per cent of the total mileage existing at the time of its passage. The mileage so designated is indicated upon the highway map reproduced on page 4 *supra*. Federal aid was henceforth to be extended only to mileage in the designated system. A final stipulation was that the roads built must be maintained either by the state or by the federal government.[1]

Extent of Federal-aid, State, and Local Road System

Of the 2,941,294 miles of roadway in the United States in 1924, 171,687 miles are within the 7-per-cent system. These highways reach directly nearly every city of 5,000 population or greater, and are so chosen that if zones ten miles wide were marked off on each side of them, these zones would include the homes of 90 per cent of the population. The so-called state highway system of the country includes this mileage, and in addition other roads sufficient to make a total of 251,056 miles. The remaining road mileage consists of county and local roads, generally unpaved, and administered, constructed, and maintained by county officials, by road improvement districts, or by various township and district officials.

It can be seen from the foregoing statements that the United States is well equipped with roads and that a systematic policy of maintenance and improvement has been devised. The problem before the country with respect to highways is, now, not so much the laying down of new routes as the proper surfacing and regrading of old routes, in order to accommodate the sensational increase in the use of motor-vehicles which has marked the last few years. This leads us to the consideration of what is virtually a new device for the carriage of passengers, and, to a less extent, for the carriage of goods.

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[1] United States Department of Agriculture, *Yearbook*, 1924, pp. 100–101.

Motor-vehicles in the United States

The statistics of production and of registration of motor-vehicles in the United States go back to 1895. For five-year intervals they are as follows:[1]

Year	Production	Registration
1895	4	4
1900	5,000	8,000
1905	25,000	78,000
1910	187,000	468,500
1915	969,930	2,445,666
1920	2,204,947	9,231,941
1925	4,150,235	19,954,347
1926	4,223,170	22,001,393

Out of this figure of 22,001,393, representing the total registration of automobiles in the United States in 1926, 19,237,171 were passenger cars and 2,764,222 were trucks. There are no statistics of number of passengers handled or tons of freight moved. We have already seen, however, that a rough estimate would yield a figure of nearly 4 billion passengers. If each passenger is carried, on the average, 20 miles, the total transportation service would approximate 80 billion passenger miles. The investment in motor-vehicles is not known, but the value of the annual product of the industry is estimated by the National Automobile Chamber of Commerce at $3,163,756,676. The capitalization of the street railroads of the United States is, it will be recalled, about 5½ billions and that of the steam railroads about 20 billions. These latter figures, however, cover the cost of rights of way and roadbed, with which an automobile is not directly concerned.

Definition of an Automobile

The automobile has been defined as a self-propelled power vehicle not operated or driven upon fixed rails or tracks.[2] In this sense, Cugnot's road wagon of 1769 was an automobile, and the same name can be applied to many other of the steam-driven machines which antedated the railroad or competed with it during its early years.[3]

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[1] National Automobile Chamber of Commerce, *Facts and Figures of the Automobile Industry*, 1926.

[2] *Re* motor-vehicles, P. U. R. 1919A, 52 (Ariz.).

[3] Young, *The Complete Motorist*, London, 1905.

Daimler and Levassor

The significant beginning of the automobile is to be found, however, rather in the later invention and application of the internal-combustion gasoline engine, than in these early experiments.

The internal-combustion engine using gasoline or petroleum spirits was patented by a German mechanic named Gottfried Daimler in 1884. Daimler fitted his engine to a bicycle, and afterward to boats, one of which ran on the river Seine during the Paris Exposition of 1887. In this engine, a Frenchman named Levassor became interested. Levassor was a member of the firm of Panhard & Levassor, manufacturers of wood-working machinery. The firm secured the French rights to Daimler's invention in 1887. Levassor himself devised the ingenious system of clutch, gears, and differential for the application of power to driving-wheels which characterizes the automobile to-day, and the motor-vehicle may be said to have been born.[1]

Later History of the Automobile

The first workable automobile was constructed in 1887, after which followed a period of improvement, advertising, production, and distribution which has lasted to the present time. The somewhat extraordinary development of the automobile will not be described in this book, except to comment in passing upon its rapidity, and upon the fact that the motor-vehicle differed from the steam railroad or the electric street railway car in that it was intended from the beginning to be sold direct to private users, not to companies engaged in transportation as a business. Even at the present time, when motor-bus lines and trucking companies are multiplying, most cars are still operated by their owners. This fact of individual use has had an important influence upon the types of motor-vehicles placed upon the market, as well as upon the volume of sales and the character of use to which automobiles have been put.

Traffic Surveys and Investigations

The most complete general information regarding the use of motor cars in the United States is to be found in reports on traffic surveys conducted by the United States Bureau of Public Roads in coöperation with local authorities, and in testimony and exhibits assembled by the Interstate Commerce Commission in 1926.

The Interstate Commerce Commission's investigation was undertaken upon the Commission's own motion in 1926 in order to obtain information upon which recommendations for legislation might be based. Hearings were held at representative points in all principal sections of the United States, and briefs were filed by parties interested. Taken in connection with the state surveys, the federal investigation provides an entirely unusual and comprehensive body of information regarding the carriage of freight and passengers by motor-vehicles in the United States.

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[1] Young, *supra cit.;* Encyclopedia Britannica, 11th ed., vol. 18, pp. 915–916, Art. "Motor Vehicles."

In addition to the federal inquiry, state surveys have been undertaken in California, Maine, Connecticut, Pennsylvania, Illinois, and Ohio, besides local counts in other places, the results of which have not been published. The method of making a survey is to establish stations at a large number of points upon the highways of a state. Cars passing these points are counted, the number of passengers is observed, in some cases the cars are stopped and the length of the projected trip is asked, and the weight of the truck, if it be a truck, is taken. The count in California covered the period from August 27 to September 20, 1922, and from January 25 to March 3, 1923. In Connecticut, passenger-car records were kept from September 11, 1922, to February 11, 1923, and motor-truck records from September 11 to December 3, 1922. The Maine survey lasted from July 1 to October 31, 1924, that in Cook County, Illinois, was conducted during the summer and fall of 1924, while the Ohio survey continued for the period of one year from December, 1924. The results of the Pennsylvania surveys are not yet in print.[1]

Types of Motor Service

Motor-vehicles may be divided into four types, of which three are the private passenger car, operated generally by the owner and accommodating from two to seven persons; the motor-bus; and the motor-truck. A fourth type, the motor-driven rail car, will be referred to briefly in the course of the discussion.

The Privately Owned and Operated Automobile

This is unquestionably the most important type of motor-vehicle; it is at the same time the type about which the fewest definite facts are known, for the reason that private owners are subject to no regulatory bodies, keep few records, are required to make no reports, and have no reason to advertise the services which they perform because they are their own chief customers. The student is therefore compelled to rely, for all except the number of registered vehicles and the nature and amount of taxes collected, upon the information provided by occasional highway surveys. The available facts relating to number, load, length of haul, average speed, and character of use of private cars will be briefly presented in the following paragraphs.

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[1] Partial traffic counts have been conducted by state or local authority in a number of other states. In most cases these counts have contented themselves with recording the number of vehicles passing selected points on the highway at selected distances, with some slight classification of the vehicles observed. They are much less elaborate and informing than the surveys referred to in the text. For a discussion of the traffic census and a list of counts taken up to the date of publication, see *Public Roads*, vol. iii, December, 1920.

Types of Vehicles

Of the vehicles on the public roads to-day, the greater part, as has been said, are privately owned passenger cars. The traffic census in California counted 2,037 vehicles per sixteen-hour day during twenty-five days in the summer of 1922. Of these, 1,724 were passenger cars, 254 were trucks or truck trailers, 35 were buses, and 24 were horse vehicles.[1]

Another illustration is from Maine, where from July 1 to October 31, 1924, the United States Bureau of Public Roads recorded 357,000,000 passenger-car miles as against only 35,000,000 car miles of motor-trucks during the same period. Buses are not distinguished from private cars in this survey.

Horse-drawn vehicles have practically ceased to operate on American highways. They have been eliminated not only by the superior efficiency of the motor-car, but by the danger of driving on the highway at speeds below those common to motor-vehicles. The bad effect of the hard and slippery roads upon the feet of horses has also been an important factor. It is easy, however, to forget how recent the displacement of the horse has been. While there are no statistics in California older than 1922, it appears that 57 per cent of the highway traffic in Massachusetts was horse-drawn as late as 1909. Ten years later in Iowa, the percentage of horse-drawn to total vehicles was still 9.7 per cent.[2]

Average Load and Average Hauls

Speaking now only of passenger cars, the average number of passengers per car in California was 2.02 in summer and 1.84 in winter. In Ohio the average was 2.3, and in Illinois it was 2.7, ranging

[1] United States Bureau of Public Roads, "A Report of Traffic on Some Highways in California in 1922."

[2] Johnson, "The Traffic Census." *Public Roads*, vol. iii, December, 1920.

from 2.3 persons per car where the proportion of business traffic was large, to 3.5 where business traffic was less considerable.

Contrary to the general impression, the average passenger haul by automobile is rather long. Thus, while the average passenger journey on steam railroads in the United States was 38.7 miles in 1924, the average passenger automobile trip in California in 1922, and in Ohio in 1925, was 38 miles. In Connecticut in the former year it was 45.1 miles. The Connecticut survey affords the further information that the average trip mileage was 29.7 miles for business, and 55.5 miles for non-business traffic.

In comparing automobile with railroad hauls, however, it must be remembered that the average length of the latter is reduced by the inclusion of suburban and commuter traffic. Short-haul city automobile traffic does not affect motor-vehicle averages to the same extent because the location of counting stations in motor-traffic surveys is largely upon the open highway.

Average Speed

The only survey of the United States Bureau of Public Roads which reports speed of automobiles is that in California, where speed tests with stop watches on measured road intervals of 200 yards were taken at several points in the central and southern portions of the state; in all, 4,784 vehicles were observed. The speed at three stations was reported as follows:

SPEED TESTS IN CALIFORNIA

Class of car	Number of vehicles	Average speed per hour
Passenger cars—light	404	26.2
Passenger cars—heavy	440	31.4
Trucks—light, loaded	75	19.1
Trucks—light, empty	81	20.9
Trucks—heavy, loaded	72	14.0
Trucks—heavy, empty	51	17.0
Buses.	39	33.1

Road passenger cars and buses appear to travel on the excellent California highways at close to the legal maximum speed of thirty-five miles an hour. Trucks, not unnaturally, proceeded more slowly.

Pleasure and Business Uses of the Automobile

A large proportion of automobile travel may be classified as a pleasure use. The estimate in Connecticut in 1922 was 65 per cent pleasure and 35 per cent business. Cook County, Illinois reported 68 per cent non-business and 32 per cent business; and the fact that in California approximately 41 per cent of all vehicles were counted on Saturdays and Sundays, leaving only 59 per cent for the other five days of the week, suggests that passenger automobiles are largely used for pleasure traffic. Truck movements upon the highways in California show no similar week-end concentration.

Motor-bus

This is a vehicle accommodating from four to forty-five passengers in addition to the driver, operating usually between fixed termini on a determined route. It functions, like the railroad and the interurban, as a common carrier, but differs from these in that it travels universally upon the public highway and not at all upon its own right of way.

The Jitney

In its origin, motor-bus service was very simple, as the story of the jitney indicates. The jitney was a five- or seven-passenger automobile, usually operated by its owner, and used for carrying passengers in some of the principal American cities. It seems to have been first recognized as a distinct type in the fall of 1914. The number of jitneys increased very rapidly for a time and caused some embarrassment to the street railway companies, particularly between the years 1915 and 1920. The service never, however, rested on a secure foundation.

Generally speaking, the jitney car had been bought for other purposes than common-carrier transportation, and was used more or less as an afterthought to bring revenue to its owner. It offered certain conveniences to users, but the jitney proved in the long run unprofitable to operators, while the excessive space occupied upon the streets, the effect upon other means of transportation, and the irresponsibility of car owners made it an undesirable machine from the point of view of municipal public policy. Unfriendly legislation and unsatisfactory revenues together account for the disappearance of the jitney from the city street.

Statistics of Motor-buses

The National Automobile Chamber of Commerce and the periodical known as *Bus Transportation* jointly estimate the number of buses in use in the United States as follows:

ESTIMATED ANALYSIS OF BUSES ACCORDING TO USE—AS OF JANUARY 1, 1927

Common-carrier operations	
Intrastate motor carriers	31,500
Interstate motor carriers	2,500
Electric railways and subsidiaries	7,284
Steam railroads and subsidiaries	522
Total common-carrier operations	41,806
Non-common-carrier operations	
Hotel buses	1,050
Sight-seeing and tours companies	2,650
Industrial uses	1,100
Schools (public and private)	32,800
Other miscellaneous uses, including railroad terminal companies	400
Total non-common-carrier operations	38,000
Total buses—estimated	79,806

The total is based upon studies which account for 86 per cent of the total, the balance being estimated.[1]

The City Omnibus

In city traffic the jitney has given way to the slower, more capacious, motor-driven omnibus, accommodating from thirty to forty-five persons instead of from five to seven, and frequently carrying passengers on top as well as within the vehicle. These buses approximate the street cars in capacity, and do not greatly differ from them in point of speed.

Advantages of the City Bus

The advantages of the bus over the street railway car with which it competes are chiefly in cheapness of installation and in flexibility of operation. The bus line constructs no permanent way, and so saves an important element in expense. The first cost of an electric installation is also likely to be greater than the cost of gasoline cars, unless the passenger movement is very heavy. It has been estimated that for these reasons a motor-bus can be supported on a population of 250 per mile, while under present price conditions a street railway would require at least 1,500 per mile for like conditions. Bus lines are, therefore, adapted to lightly settled areas and for pioneering work. It is true that, in a certain measure, bus-line construction is cheap because the taxpayer builds the road over which the bus operates; but this is not the whole story, and even if it were, the competitive advantage of the bus would still be real.

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[1] *Bus Transportation*, February, 1927.

Besides being cheap to install, the bus is also flexible in operation; it is not tied to one street or even to one position in a street. Buses are able to avoid fires, parades, or other obstructions by détours. They can deliver passengers at the curb. A bus in movement can pass a bus that is loading or unloading passengers. While tastes differ, many people find the bus pleasanter to ride upon than the street railway. These advantages insure a place for city bus service, in spite of certain balancing disadvantages.

Disadvantages of the Bus

The chief disadvantage of the bus is a higher cost of operation with moderate volume of traffic, and a higher cost of maintenance, also, if the expense of keeping up the roadbed is taken into account. More energy is required to move a passenger in a bus than in a street car, equipment depreciates more rapidly, and more skill is required of the driver. In addition to all this, the bus uses the street less effectively than the railway unless it is double decked, and then the occupation of the upper deck is unpleasant in stormy weather.

Use of Buses by Electric Railways

The merits of the bus in certain types of city service are so marked that in recent years a number of street railways have added gasoline coaches to their equipment of electric rail cars. Thus by January 1, 1927, there were 266 electric railways in the United States engaged in bus operation, operating 7,284 buses over routes aggregating 13,619 miles.[1] Most of this service is recent. A nation-wide survey conducted by the Electric Railway Association in January, 1924, located 123 street railway companies operating in the aggregate 1,207 buses. Out of the 123 companies, 3 had begun bus operation the same month the inquiry was made, 51 had started in 1923, 30 in 1922, 13 in 1921, 13 before 1921, and 13 did not report the date of beginning.

The use to which electric lines put these buses varies, of course, in different places. In a considerable number of cases, the bus has been substituted for rail operation, in whole or in part. According to *Bus Transportation,* this has occurred upon no less than 2,279 miles of track between 1917 and 1927, including 1,471 miles in which buses were substituted for the entire rail system of a company and 809 miles in which they were substituted for part of it. More frequently the bus has been used as a rail extension, or to open new routes to the center of the city, or for cross-town work, or for interurban service where the traffic would not justify electric service.[1]

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[1] *Bus Transportation,* February, 1927.

In general, there seems to be little tendency for the city bus to take the place of the street railway in the mass transportation of passengers in large cities, but for special purposes, on special routes, and where traffic is light, the bus has demonstrated its utility. City bus service is by no means confined to the United States; on the contrary, the systems in operation in European cities such as London, Berlin, and Paris are highly developed.

Interurban Bus Lines

In addition to the slow, capacious city omnibus, large, fast motorbuses are in operation upon many interurban routes. These buses compete with interurban electric railways, and also with steam railroad lines.

The number of motor-vehicles on the public roads is surprising. We have already referred to estimates published in 1927 which set 41,806 as the number of buses in operation in the United States as common carriers, on the basis of an enumeration of 32,425 buses, or 78 per cent of the whole. Out of the 32,425 buses actually enumerated, 17,598 were of street-car type, 9,971 of sedan and parlor-car type, and 4,856 were touring cars. Interurban travel is carried by automobiles of the two last named varieties of motor-vehicle. There were 986 of these common-carrier interurban buses in New England, 4,434 in the remaining states north of the Ohio and Potomac and east of the Mississippi, 3,256 in the Southeast, 3,264 in the states west of the Mississippi up to the Pacific coast, and 2,887 in California, Oregon, and Washington. The statistics quoted do not distinguish between the route mileage covered by buses of the street-car type and other buses. The total miles of route on which buses were operated in the United States as of January 1, 1927, was, however, 270,068.[2]

According to the Bureau of Public Roads, the total length of routes in eight states[3] in the year 1925 was 18,196 miles. Deducting 102 miles for overlapping leaves 18,094 miles. This figure amounted to 7 per cent of the rural, or 68 per cent of the state, highway mileage of these commonwealths. As a matter of fact, the total railroad mileage in the eight states referred to was only 22,994, so that buses reached nearly as much territory as railroads, although they had not, of course, the same capacity for transportation.[1]

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[1] *Electric Railway Journal*, January 5, 1924, p. 8; October 31, 1925, p. 799.

[2] *Bus Transportation*, February, 1927.

[3] Connecticut, New Hampshire, West Virginia, Kentucky, Arizona, Oregon, Washington, and Maryland.

Period of Transition

This interurban automobile service is in a state of transition. Figures show that a large number of highway bus lines still operate with small fleets of ordinary passenger automobiles managed by individuals or partnerships, and financed by the capital of the proprietors.

CLASSIFICATION OF INTERURBAN AND SUBURBAN MOTOR-BUSES ACCORDING TO CAPACITY, 1925 [2]

State	Number of buses of various capacities				
	1–7 passengers	8–14 passengers	15–24 passengers	25 passengers and over	Total
Connecticut	40	30	77	21	168
New Hampshire	12	18	14	—	44
West Virginia	91	14	43	1	149
Kentucky	148	70	51	1	270
Arizona	62	10	17	3	92
Oregon	—	—	—	—	—
Washington	147	173	191	35	546
Maryland	7	47	96	11	161
	507	362	489	72	1,430

In contrast with the organizations just described, there exist today, however, a considerable number of powerful corporations operating large fleets of specially built cars, and earning revenues which in California amount sometimes to half a million dollars in the course of a year. The equipment of these corporations is being constantly improved. Some of the latest types of vehicles have smoking compartments, toilets, facilities for furnishing lunches, reclining chairs for night travel, and space for carrying seventy-five to one hundred and fifty pounds of baggage per passenger.

There is some tendency for the larger concerns, which dominate the principal routes, to consolidate with each other, and it is not unreasonable to expect, in the long run, something of the concentration and stability among bus services which already exists among railroads. Speaking of conditions in California, the general manager of one large motor company testified before the Interstate Commerce Commission with respect to the consolidation movement in that state:

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[1] *Public Roads*, December, 1925, p. 214.

[2] *Public Roads*, December, 1925, p. 218.

> " . . . Take a typical illustration. . . . We will say 'A,' a line operating under the name of 'A' between Los Angeles and San Diego. There might be 60 individual cars running on that line. They had arranged with the broker to put the name 'A' on the cars, quote and sell their tickets for them, and as they came in they would draw up in front of the station and load in the passengers [that] might be there, and go on. Later on these 60 men or their successors would combine into an association, later incorporate a company and operate as one unit, as one corporation, with as many cars as might be required.
>
> "That has been the growth of the stage business—the lines became consolidated into one operating company and that one operating company in time has been more or less buying smaller or feeder lines, or competitive lines, grouping the service into one complete service to cover the territory offered." [1]

The history of bus amalgamation has not, everywhere, been the same, but it is reasonably clear that the future lies with the larger bus company. It alone can provide equipment calculated to attract traffic from the railroad, it can command superior managerial ability, and it is the more likely to adopt sound policies of accounting and of finance.

Advantages and Disadvantages of Interurban Buses

Like the city bus, the interurban motor service enjoys the advantage of the small investment which it requires for operation as compared with the expenditure necessary to install railroad or interurban service, the advantage of the ease with which routes can be altered and established, and that of the frequency of service made possible by the fact that the unit of bus operation is the single car, not the train.

The disadvantage of the bus is that it operates upon the public highway and so is subject to interference from other traffic, which reduces speed and increases the likelihood of accident. Nor can the bus line maintain or police its route according to railroad standards. Again, the bus is lighter than the railroad car, affords less freedom of movement to passengers, and is generally unable to supply sleeping and dining facilities *en route.* It is therefore less able to handle long-distance traffic.

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[1] Motor Bus and Truck Investigation. I. C. C. Docket No 18,300. Vol. viii, pp. 1797–1798, testimony Howell.

Interurban Bus Lines Supply Complementary Service

It is still to be determined how far this new mechanism will supply a service that is complementary to the steam railroad and to the interurban railway, and how far it will be competitive with the older forms of transportation machinery. One fact to be considered is that a considerable portion of the bus routes in the United States do not lie parallel to existing railroad lines. This matter of location was considered at length by the economist of the United States Bureau of Public Roads in 1925, and his conclusion, based upon figures for seven states [1] was that only 41 per cent of the mileage of bus routes in these states paralleled railroad lines. An additional 28 per cent of bus routes competed indirectly with railroads in that their terminals were also connected in some manner by railroad, though to travel between bus terminals by railroad necessitated change of trains at one or more junctions and a roundabout journey. The balance of the bus routes were wholly noncompetitive.

This study added that in many cases the bus routes indirectly competing with railroad service provided cross lines which were very much shorter than the railroad routes, and it may be argued with some force from this fact that railroad service in such cases was uneconomical and could properly be disregarded.

Competition Between Motor Buses and Steam Railroads

On the other hand, there is little question but that the interurban bus has diverted traffic from the railways in an important degree in particular instances, even though many bus routes do not parallel railroad tracks, and this in spite of the fact that bus rates are frequently higher instead of lower than railroad fares. Some evidence of this fact is, for instance, supplied by official statistics in California, where, between 1922 and 1925 the number of passengers carried by railroads in the state decreased 6 per cent, while the number of passengers carried by the motor-stage lines increased 5 per cent. The decline in the number of passengers carried by the steam railroads of the United States between 1921 and 1924 and the increase in the length of the average railway passenger journey points to the same conclusion.

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[1] *Public Roads, sup. cit.*

Still further evidence of the competition between motor and railway passenger service was collected for the Interstate Commerce Commission in 1926, and submitted in docket No. 18,300. This last-mentioned material consists of historical statements regarding the volume of railroad passenger business over a series of years in sections served by automobile, of comparisons of bus and of railroad fares, and of estimates by well-informed persons with respect to the effect of bus service upon railroad travel. The record prepared for the Commission shows that in the Middle West the bus fares are generally, although not always, lower than the railroad fares, and the service more frequent. In other parts of the country the buses do not show the same advantage with respect to fares, but charge sometimes more and sometimes less than the rail lines. Regardless of fares, however, the testimony taken for the Commission refers to a large number of cases in which railroad earnings notably declined after the installation of a bus service, and demonstrates with reasonable conclusiveness that the bus and the private automobile together have captured a considerable portion of the local short-haul railroad business, and a smaller undetermined part of the railroad long-distance traffic. It is seldom possible to determine how much of the railroad losses are due to bus competition and how much to the still more serious competition of the privately owned and operated automobile, nor is there basis for a precise quantitative estimate of the net results of bus operation upon railroad revenues.

The simplest competitive policy followed by the railroads in order to meet bus competition has been to add to existing passenger service, to organize excursions, and to oppose applications of bus and truck operators for permission to do business as common carriers. In addition to these somewhat obvious policies of resistance railroads have themselves engaged in bus operation or have undertaken to operate rail motor-coaches upon their own rails.

Motor-Vehicles on Railroad Tracks

For main-line service, when traffic is heavy, the gasoline car cannot compete with the steam locomotive. On the other hand, a single car driven by an internal-combustion engine is less expensive to operate than a steam train with its minimum equipment of locomotive, tender, and coach. The gasoline car is therefore well adapted to branch-line service, and it has even advantages on the main line when frequency of service is important and the average paying load small.

An illustration of this type of vehicle is a gasoline rail car recently built for the Susquehanna and New York Railroad Company.[1] The maximum speed of this coach is sixty-three miles per hour, and it has seating capacity for fifty persons.

Operation of Bus Lines by Steam Railroad Companies

In addition to meeting competition by the operation of motor-vehicles upon their own rails, a number of railroad companies have formed subsidiary organizations which operate buses on railroad account.

The following quotation from a statement announcing the inauguration of a railroad bus service by the New York, New Haven, and Hartford Railroad Company, through the New England Transportation Company, will explain the reasons actuating railroads in this policy.

> "The New York, New Haven, and Hartford Railroad Company," said an officer of the Company, "has for some years past recognized that new methods of transportation have come into existence, which are destined to occupy a permanent place in the public service. However these methods of transportation might develop, the territory which the company serves will always be dependent for the bulk of its heavy transportation upon railroads.
>
> "Passenger service on some lines can no longer be operated with steam locomotives except at a large loss, and so the company has been a pioneer in experiments looking to a less expensive method of operation. To this end it has coöperated with the manufacturers of gasoline rail cars and has substituted such cars for certain of its passenger trains for the continuation of service which, because of light travel, could only be provided for by less expensive methods of transportation.
>
> "The company finds that there are some portions of its system which cannot be operated economically even by gasoline cars for passenger service, with the frequency of service desired by the public. Where such conditions exist, it is the intention of the company, so far as possible, to continue to perform freight

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[1] *Railway Age,* December 26, 1925, p. 1183.

> service and such passenger train or gas rail-car service as may be required, and to operate over parallel highways with buses.
>
> "There are still other points on its rails between which transportation has been heretofore performed by routes that are now circuitous, compared with the distances over the recently constructed highways. It is the company's plan to consider highway bus service between certain of such points and to so handle the travel which originally used the rail.
>
> "Coöperating with the passenger and transportation heads of the company, the management of the New Haven will to the fullest extent practicable make it an extension of, supplemental, and complementary to existing service." [1]

In addition to the use of buses in out-of-town service, some railroads have found a place for the motor-vehicle in terminal operation. An example of this is afforded by the withdrawal of the Baltimore and Ohio, in 1926, from the Pennsylvania Station, which it had used as a New York terminal, and the substitution of motorbuses for the rail service between the Baltimore and Ohio rail terminus in Jersey City and the downtown districts in Manhattan and Brooklyn.[2]

The adoption of buses by steam railways is a very recent development. Services are, however, now being operated in behalf of the Boston and Maine, the New York, New Haven, and Hartford, the Great Northern, the Spokane, Portland, and Seattle, the Chicago, Milwaukee, and St. Paul, the Canadian Pacific, the Pennsylvania, and by a number of other companies. Replies to a questionnaire issued by the Interstate Commerce Commission in 1926 showed a total of 505 buses operated by railway companies or by subsidiaries of these companies, as contrasted with 21,863 buses operated by motor-transport companies and individuals.[3] This is the small beginning of a practice which is likely to be considerably extended.

Motor Trucks

The principal uses of the freight automobile, or motor-truck, include the following:

1. One familiar type of operation is found in the delivery service

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[1] *New York Journal of Commerce*, June 16, 1925.

[2] *Railway Age*, Motor Transport Section, January 22, 1927.

[3] *Railway Age*, Motor Transport Section, January 22, 1927. A tabulation by the *Railway Age* as of July 1, 1927, showed that railway operated buses then numbered 822. *Ibid.*, August 27, 1927.

of retail stores, including butcher, bakery, dairy, and grocery, as well as department stores, for hauls beyond a certain length, where traffic conditions and the schedule of deliveries permit an average speed exceeding that which a horse is able to maintain. The exact point at which the truck is to be preferred to the horse must depend upon the results of investigation in each case; there is, however, no doubt but that the use of motor-vehicles permits economy in many instances.

2. Another type of service is the haul of perishable commodities such as milk, eggs, vegetables, and fruit from producing territory into the larger cities. Over 95 per cent of the milk supply delivered to cities such as St. Paul, Milwaukee, and Cincinnati comes in by motor trucks.[1]

In California fruit moves by truck from field to packing-house, from packing-house to rail siding, or direct from field to market. The movement is seasonal and may start with the cantaloupe crop in the Imperial Valley where the peak season continues for a few weeks; then the equipment may be transferred to the Los Angeles district to take care of the transportation of citrus fruit or hay and grain, from there to the Bakersfield district for the cotton crop, thence to Fresno for the grain and raisin crop, and thence on to other districts successively to meet the peak production of other crops, until, within the course of a year, a large amount of transportation equipment has made practically a complete round of the state and is back again to the starting-point.[2]

The organization of the transportation of perishables is extremely diverse. The Federal Bureau of Markets has found that much freight is hauled by the farmer who owns a truck and handles his personal marketing as well as that of his neighbors by motor; by local truck operators who haul as a business; by local automobile or truck agencies which also engage in rural hauling; and by large corporations which operate fleets of trucks over wide ranges of territory.[3]

3. In certain parts of the Middle West there are truck operators who specialize in the transportation of live stock from farms to packing or rail-shipping centers. Hauls of 60 to 80 miles are common. The trucks which carry outbound hogs, cattle, and sheep

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[1] United States Department of Agriculture, *Yearbook*, 1924, p. 170.

[2] Motor Bus and Truck Investigation, *sup. cit.*, p. 2044, testimony Boston.

[3] National Automobile Chamber of Commerce, "Some good reasons why motor transportation is successful."

are filled with return loads of merchandise, agricultural machinery, fertilizer, and other freight shipped from industrial centers to small towns along the motor routes.

4. An equally specialized service is that of hauling household goods. Vans constructed for this purpose often move long distances. They offer the advantage of speedy transportation and reduction in breakage, because they eliminate all intermediate handling of the freight.

5. Still other important uses of the truck are in the haulage of construction materials, such as lumber, gravel, and cement, of oil-field supplies, and of motion-picture properties.

The following table sets forth the destinations of motor trucks observed in the traffic survey in Cook County, Illinois, undertaken in 1924.

TYPES OF DESTINATION OF LOADED MOTOR TRUCKS, COOK COUNTY, ILLINOIS, 1924

Types of destination	Proportion of loaded trucks (Per cent)
Retail establishments	25.8
Construction and repair	20.8
Consumers	17.7
Wholesale establishments	10.8
Terminals	10.2
Manufacturing companies	6.7
Farms	5.5
Miscellaneous	2.5
Total	100.0

Most of the heavy trucking in Cook County consists of specialized movements of a few commodities such as brick or sand, carried in trucks with a capacity of five to seven and one-half tons. It is this movement which makes up the group entitled construction and repair. The typical motor-truck transportation in Cook County is not of this type, but rather consists of rapid hauls, in trucks of capacity varying from one-half to two and one-half tons, of the diversified products that have been mentioned.[1] This experience in Illinois is consistent with reports from other states, as, for instance, from Connecticut, where 79 per cent of the registered trucks are of two- and one-half-tons capacity or less, and the miscellaneous traffic much exceeds that carried in bulk.[1] Likewise in Maine, 95.9 per cent, in Ohio, 89.3 per cent, and in Pennsylvania, 83.7 per cent of all loaded trucks are of two-and-one-half-tons capacity or less.[2]

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[1] United States Bureau of Public Roads and the Cook County Highway Department, "Report of a study of highway traffic and the highway system of Cook County, Illinois," 1925.

Short-Haul Movements Predominate

It can be reasonably inferred from what has just been said that local distribution constitutes the bulk of motor-truck tonnage movements. As a matter of fact, surveys in different states show that in Connecticut 79.5 per cent, in California 60.7 per cent, in Maine 80.5 per cent, in Ohio, 71.6 per cent, and in Cook County, Illinois, 75.8 per cent, of the loaded trucks move less than thirty miles. In Connecticut and Maine, 47 per cent move less than ten miles.[3]

The amount of motor-truck tonnage in the long-distance zones is comparatively small, and, according to the United States Bureau of Public Roads, it is decreasing. This movement consists: (1) of perishable goods or goods requiring delivery at a specified time, which are attracted by speed and calculability of transportation; and (2) goods requiring special preparation for rail or water shipments, such as household goods.[4] Generally speaking, the difficulty of obtaining return loads and the heavy terminal expense involved make the long haul by motor truck an unprofitable operation.[5]

Advantages of Motor Truck Service

An important, and perhaps the principal advantage of the motor truck is that it is able to collect traffic at its source and deliver it to final destination with a minimum of rehandling. This enables shippers to use lighter containers, reduces the opportunity for loss or damage, and increases speed of movement by avoiding the congestion characteristic of city terminals. Sometimes it is possible to do without containers altogether. The great difference between rail and truck transportation in this regard was dwelt upon by witnesses before the Interstate Commerce Commission in 1926, and was, in particular, discussed by one truck operator as follows:

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[1] United States Bureau of Public Roads, United States Department of Agriculture, and the Connecticut State Highway Department, "Report of a survey of transportation on the state highway system of Connecticut," 1926.

[2] Motor Bus and Truck Investigation, *sup. cit.*, p. 660, testimony McKay.

[3] J. C. McKay, Chief, Division of Highway Economics, United States Bureau of Public Roads. Midwest Motor Transport Conference, Chicago, May 27, 1925.

[4] *Ibid.*

[5] Motor Bus and Truck Investigation, *sup. cit.*, p. 667, testimony McKay. This witness further testified on behalf of the United States Bureau of Public Roads: "Analysis of motor-truck transportation in the several states shows that the development of a large system of motor trucking over a considerable area beyond the short-haul zone is economically unsound. . . . The movement out of the cities is primarily a local process of distribution. The movement toward cities is largely [of] goods produced in the area, principally food products. The volume of goods moving between two shipping points is unbalanced in the short haul and progressively unequal with increase in distance, negativing the development of long-haul motor-truck transportation because of difficulty in obtaining return loads." (*Ibid.*, p. 670.)

> " 'The farmer,' said this witness, 'that wants to ship a five-ton load of cabbage from a distance of 30 miles from Boston, must either furnish containers to put that cabbage in to bring it to the railroad, or he must pay for the full car of freight to put it in. . . . In order to ship the five tons, 10,000 pounds, he must buy 100 barrels, which is our standard container for cabbage or squash, 35 cents a barrel, making $35 for those 100 barrels. He must travel anywheres within 10 to 15 miles from his place to obtain those empty barrels, bring them to his farm, load them up, and take them with his small truck or pair of horses and make possibly anywheres from 5 to 10 trips to the nearest railroad station, which is 3 to 10 miles, and pay an extra charge for 2,500 pounds for those empty barrels, because we must pay for our gross weight on the railroad, making an expense of approximately from $40 to $45 extra on those cabbages.
>
> " 'We take this cabbage . . . loose, at his door, for freight plus cartage charges, deliver it to the commission man . . . or to the dealer to his door. He provides a space for us, and it is taken right off . . . saving the farmer the travel and the containers, and saving the public that enormous expense which is no earthly good to anyone.'
>
> "Q. 'Where is the weighing done?'
>
> "A. 'At the farm. The farmer gives us his weight. Sometimes the commission man here puts [in] a scale and we weigh it again. We sometimes go on such a scale empty and weigh our truck and it is loaded up, and when it comes to Boston it is weighed on the city scales. We give the slip to the merchant or commission house, and he deducts our tare, and he gets the net weight.' "[1]

As the trucking business increases in volume and falls more and more into the hands of common-carrier organizations, trucking companies will doubtless be compelled to establish terminals of their own, while they will have to face the operating problem of concentrating shipments in order to improve their load ratios. The conditions of truck transportation will therefore come to resemble more closely the conditions of railroad transportation at the present time, so that the relative advantages of the former will decrease. Meanwhile it is very likely that railroads will undertake customer delivery and collection upon a larger scale, doubtless adding trucks for this purpose to their present equipment

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[1] Motor Bus and Truck Investigation, *sup. cit.*, pp. 3047-3049, testimony Mailkin. The language in this quotation is slightly altered in places to make it intelligible.

The truck will, however, continue to avoid the element of cost inherent in the use of two types of vehicle and roadbed which enters into every shipment by rail, while it may retain the advantage which its smaller unit capacity gives it with respect to some kinds of freight.

An additional advantage of the truck is that the minimum investment required for service is less than that required for the railroad. This advantage is emphasized at the present time by the fact that the truck frequently makes use of the public roads without paying proper compensation.[1] It is probable, however, although there are no statistics to prove the truth of the statement, that even under a proper accounting system the expense of handling a small amount of freight is less by truck than by rail. Truck service is analogous to bus service in this respect.

The motor truck supplies a more frequent service than the railroad; it tends to reduce the size and increase the variety of inventories that local merchants maintain, and it provides special service, and sometimes special equipment when required. The sum of these advantages and those previously mentioned is already sufficient to enable trucks to make serious inroads upon the short distance less than carload freight business hitherto carried by the railroads, and the limit has not yet been reached.

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[1] A study prepared by H. R. Trumbower, Economist, United States Bureau of Public Roads, estimates that motor-vehicles of all types paid, in 1925, license fees and taxes amounting to $740,000,000, or about three-quarters of the total highway bill. Trumbower argues that the taxes and contributions which industries and business men dependent upon the motor industry and highway transportation paid were enough to cover the balance, so that the burden of financing the highways might be said to have rested upon the users. This kind of calculation has some value, but it overlooks the fact that motor vehicles, like other forms of property, may be expected to contribute to the general expenses of organized government, as well as to maintain the special facilities which they employ. It is not proper, therefore, to credit the proceeds of motor-vehicle taxation entirely to highway maintenance, but only the difference between the taxes collected from motor-vehicles and the normal tax yield on similar forms of property.

Rates

Trucking rates are usually the same or higher than the rail rates from station to station, but the cost to the shipper is less because the cartage expense at either end of the haul is eliminated. This fact, together with the greater speed and flexibility of trucking service, explains the willingness of the shipper to pay a nominally higher charge. Practices in rate quotation for transportation by truck are unstandardized, although distance, condition of the roads, special service required, and value of the shipments are given weight.

Common-Carrier Truck Service

The available data do not enable us to state with any precision what part of the motor-truck service is performed by regularly organized companies engaged in common carriage, and what part by shippers who own both the trucks and the commodities which they transport. In Cook County, Illinois, 83 per cent of the loaded trucks recorded upon the county highways were found to be owned by the shippers or consignees of the commodities hauled, and only 17 per cent were engaged in commercial transportation of freight. The last-named group includes what is known as the "contract" carrier. The percentage of commercial transportation in other states is estimated by the United States Bureau of Public Roads as 25 per cent in Connecticut, 18 per cent in Ohio, and 21 per cent in New Hampshire.[1] Estimates before the Interstate Commerce Commission set the number of trucks engaged in common carriage as 10 per cent of the whole. The Bureau of Public Roads concludes that the corresponding figure in Connecticut and Pennsylvania is 6 and that in New Hampshire 13 per cent. Exact information for the United States is not, however, available on this point, and we cannot go beyond the statement that commercial trucking companies still probably handle less than one-quarter of the total trucking business, and that organized common-carrier service by truck is comparatively unimportant.

The Use of Motor-Trucks by Railroad Companies

Steam railroads have made use of trucks to extend freight service into areas without adequate rail connection, or to take the place of rail service upon unprofitable branch lines. In addition to these employments, railroads have found the following fields for motor-truck operation:

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[1] Motor Bus and Truck Investigation, *sup. cit.*, p. 4985, testimony McDonald.

1. The use of motor-trucks in station-to-station hauls in lieu of way freight trains;

2. The use of motor-trucks in cross hauls from a station on one division to a station on another division to avoid rehandling through an intermediate transfer;

3. The hauling from the small to the larger station to make possible concentration into straight destination cars, with consequent improved time and saving in expense;

4. The hauling from a central delivery station to smaller outlying stations where final delivery is made to the consignee;

5. The interchange between railroads and steamship lines and cartage in lieu of lighterage;

6. The trucking of unit containers for merchandise and coarse commodities, such as brick, etc.[1]

In July, 1927, there were forty-six railroads which used trucks, tractors, and trailers for various purposes. The number of motor vehicles employed was more than 3,400. Of the companies listed, the Boston and Albany, the Lehigh Valley, the Erie, the New York Central, the Pennsylvania, the Boston and Maine, the Delaware, Lackawanna, and Western, the Great Northern, the Maine Central, the New York, New Haven, and Hartford, and the Southern Pacific, either with their own trucks or with the trucks of contractors, provided trucking service in terminal movements. It should be noted, also, that all the railways entering St. Louis and all those entering Cincinnati, Ohio, in effect provided a trucking service in their terminal transfers through the union trucking organizations which have operated in those cities for a number of years. The Buffalo, Rochester, and Pittsburgh, the Lehigh Valley, the Baltimore and Ohio, the New York Central, the Pennsylvania, the Long Island, and the New York, Ontario, and Western used trucks to replace local freight trains. Trucks were used to provide a store-door delivery by the Canadian National, the Lehigh Valley, the Erie, the Boston and Maine, the Delaware, Lackawanna, and Western, and the Maine Central.[2]

Most of the railroads which operate trucks or buses do so through subsidiary companies, on the theory that a higher efficiency is obtainable through a separate highway transportation organization. At the present time, however, the majority of trucks in railroad service are operated neither by the railroads themselves nor by railroad subsidiaries, but are managed by independent trucking concerns under contract with the rail carrier. Further discussion of this and other truck-operating practices will be postponed to the chapter on terminals, where these matters can be appropriately discussed.

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[1] G. C. Woodruff, "The Railroad's relation to motor trucks. Place of train, trolley, truck and bus in New England." Pamphlet issued by the National Automobile Chamber of Commerce, No. 205, p. 11.

[2] *Railway Age*, December 12, 1925, p. 1081. *Ibid*, p. 603, September 24, 1927.

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Valuable surveys of highway traffic have been conducted by the United States Bureau of Public Roads in coöperation with various other public bodies. Summaries of these surveys in Maine, Connecticut, and California have been published in *Public Roads,* 1924 and 1925. A portion of the information obtained by the Interstate Commerce Commission in Docket No. 18,300, 1926, is also available for distribution.

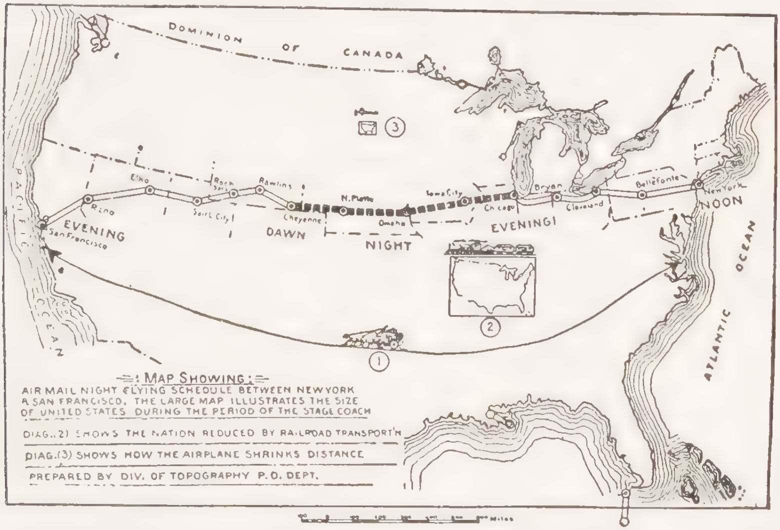
CHAPTER VII

EXPERIMENTS IN AVIATION

United States Air Mail

In the United States the principal air services are those operated by the Government for the carriage of the mails.

Air mail service in the United States began on May 15, 1918, when the Post Office Department established a line between New York and Washington, approximately 200 miles. The distance was too short to permit of any substantial saving in time, and the service was discontinued. In 1919, this beginning was followed by the inauguration of service on sections of the transcontinental route, and on September 8, 1920, through service was attempted between New York and San Francisco. At first flights were made only during the day, the mail being turned over to the railway mail service at night, but on July 1, 1924, a through day and night service was begun.


DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
San Francisco
Reno
Elko
Salt City
Rock Spgs
Rawlins
Cheyenne
N. Platte
Omaha
Iowa City
Chicago
Bryan
Cleveland
Bellefonte
New York
EVENING
DAWN
NIGHT
EVENING
NOON
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MAP SHOWING:
AIR MAIL NIGHT FLYING SCHEDULE BETWEEN NEW YORK & SAN FRANCISCO. THE LARGE MAP ILLUSTRATES THE SIZE OF UNITED STATES DURING THE PERIOD OF THE STAGE COACH
DIAG. (2) SHOWS THE NATION REDUCED BY RAILROAD TRANSPORT'N
DIAG. (3) SHOWS HOW THE AIRPLANE SHRINKS DISTANCE
PREPARED BY DIV. OF TOPOGRAPHY P.O. DEPT.

United States Air Mail Map Showing Comparative Speeds of Different Forms of Transport

The schedule westbound of the transcontinental service, New York to San Francisco, a distance of 2,661 miles, is 32 hours and 30 minutes, including stops at fifteen stations for service and exchange of mail; that for the eastbound trip is 29 hours, the difference being accounted for by the fact that the prevailing winds are from the west and help the eastbound ship, while they correspondingly retard the one westbound. This service saves two to three days over train mail time.

New York-Chicago Night Service

In July, 1925, a special night service was begun over the 712 miles between New York and Chicago, leaving New York at 9.30 P. M. and arriving at Chicago at 5.45 A. M., or leaving Chicago at 7.30 P. M. and arriving at New York at 5 the following morning. This enabled the postal authorities to deliver a letter mailed at the close of business in either New York or Chicago at the other end of the route on the first regular city carrier delivery the following morning. It accomplished a saving of an entire business day.[1]

Contract Services

Under the Act of February 2, 1925, the Postmaster-General is authorized to contract with private parties for the transportation of air mail or first-class mail at rates not to exceed four-fifths of the revenues received. This authority is in harmony with the intention of the Post Office to withdraw from air transport operations in favor of private carriers, and the Department has taken advantage of it to award eleven contracts, in addition to those on the Transcontinental Airway, as follows:

CONTRACT SERVICES IN OPERATION, 1927 [2]

Routes	Contractor	Air mileage
New York to Boston	Colonial Air Transport	219
St. Louis to Chicago	Robertson Aircraft Corp.	268
Dallas to Chicago	National Air Transport	995
Los Angeles to Salt Lake City	Western Air Express	663
Salt Lake City to Pasco	Walter T. Varney	540
Detroit to Cleveland	Ford Motor Co.	155
Detroit to Chicago	Ford Motor Co.	252

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[1] Annual Report of the Postmaster-General for the fiscal year ending June 30, 1925. The United States postage rate on air mail is 10 cents a half ounce or fraction thereof regardless of distance covered. Effective July 1, 1927, the Transcontinental Airway was transferred to the Department of Commerce. This airway will be operated by private contractors. The National Air Transport, Inc., will operate the section between Chicago and New York; the Boeing Airplane Company will operate the section between San Francisco and Chicago.

[2] United States Department of Commerce, Aeronautics Branch, Information Bulletin No. 1, 5th ed., October 1, 1927.

Los Angeles to Seattle	Pacific Air Transport	1,080
Chicago to St. Paul and Minneapolis	Northwest Airways	399
Pueblo to Cheyenne	Colorado Airways	200
Pittsburgh to Cleveland	Clifford Ball	121

All of these routes connect with the transcontinental route. In addition to the services just mentioned, there are two private contract routes in the United States for the transportation of foreign mails by air—one between Seattle, Washington, and Victoria, British Columbia, 77 miles, and one between New Orleans and Pilottown, Louisiana, 75 miles, in close connection at Pilottown with steamers to and from Cuba and Central and South America.

Some of the air lines mentioned carry mail only, but the Colonial Air Transport, the National Air Transport, the Western Air Express, the Pacific Air Transport, the Northwest Airways, the Colorado Airways, and the lines between San Francisco and Chicago and between Seattle and Victoria carry passengers also. Little express was moved by air in 1926 except by the Ford Motor Company out of Detroit, and this was not a common carrier-service. It is expected that all lines will, eventually, round out their operations with mail, passengers, and express.

Privately Operated Air Lines in the United States

Up to the present time there has been almost no regular air transit in the United States except the mail service just described. The exceptions to this statement include:

1. Passenger routes operated by the Aeromarine Airways, Inc.; (a) from Key West to Havana, 105 miles; (b) from Detroit to Cleveland, 95 miles; and (c) from Miami to Nassau, 185 miles. All three of these routes were inaugurated in 1921; one of them was discontinued in 1923, and the other two in 1924. While in operation they supplied a daily service for passengers and baggage at rates which ranged from two and one-half to five times the steamer fare between termini.[1]

2. A commercial passenger service between Cincinnati and Louisville, operated by the Embry-Riddle Company.

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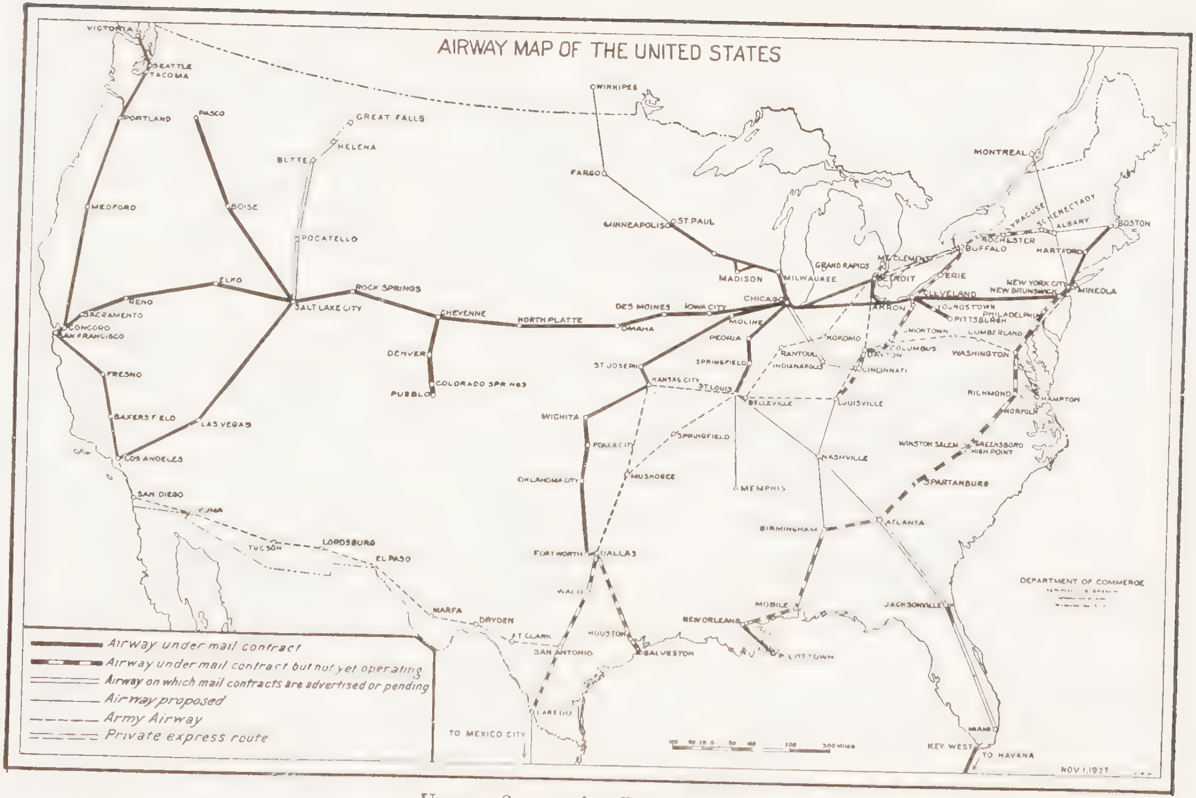
[1] The Key West to Havana service carried some mail and a small amount of freight, consisting mainly of excess baggage. The schedule of the Detroit-Cleveland service called for two ships each way daily—that of the other services for one ship each way daily. In addition to the three routes listed, the Aeromarine Airways operated at times an unscheduled service between New York and Atlantic City, and, for one season, a commercial passenger line between New York and Newport. (Report by the Joint Committee on Civil Aviation of the United States Department of Commerce and the American Engineering Council, 1926.)



UNITED STATES AIR ROUTES, 1927

3. Certain small local services between San Pedro, California, and Catalina Island, and between Los Angeles and San Diego. The Catalina service is operated by the Wrigley interests, who own the island, and the Los Angeles to San Diego service by an airplane manufacturer, who has obvious advantages in connection with the supply of flying equipment.

4. A service operated by the Continental Motors Corporation between its plants in Muskegon and Detroit.

5. An air line operated by the Stout Air Services between Detroit and Grand Rapids.

European Air Service

The great distances to be traversed in the United States offer exceptional opportunities to air transport. European air lines are, however, more numerous than American, and the volume of commercial business which they do is larger, especially in England, in France, and in Germany.

English and Continental Air Routes

The principal regular air services in England and upon the continent of Europe are indicated on the accompanying map.

British air lines operated during 1926 were: London to Paris, Basel, and Zurich; London to Ostend; London to Amsterdam (until October 15); London to Brussels and Cologne; Southampton to Channel Islands, and Cairo to Bagdad and Karachi on the route to India.

The most successful French line is the service to North Africa. Other services are: Paris to London and Amsterdam; Paris to Cologne; and a service to Central Europe and the Far East, terminating in Warsaw and in Constantinople.

The German network of air lines is more elaborate than that in any other European country. Daily services are available between most of the larger cities, while extensions beyond the boundaries of Germany afford communication with Copenhagen, Stockholm, Innsbruck, Vienna, Zurich, and Budapest.[1]

Other European countries which possess commercial air services are Belgium, Italy, Holland, Hungary, Czecho-Slovakia, Poland,

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[1] The Königsberg-Moscow and the London-Köln routes are served by Russian and English, not by German planes. *Lustfahrt*, July 9, 1926, p. 1923.

Denmark, and Sweden. These services are, however, less extensive and important than the routes which have been described.

Comparative Statistics of Route Mileage

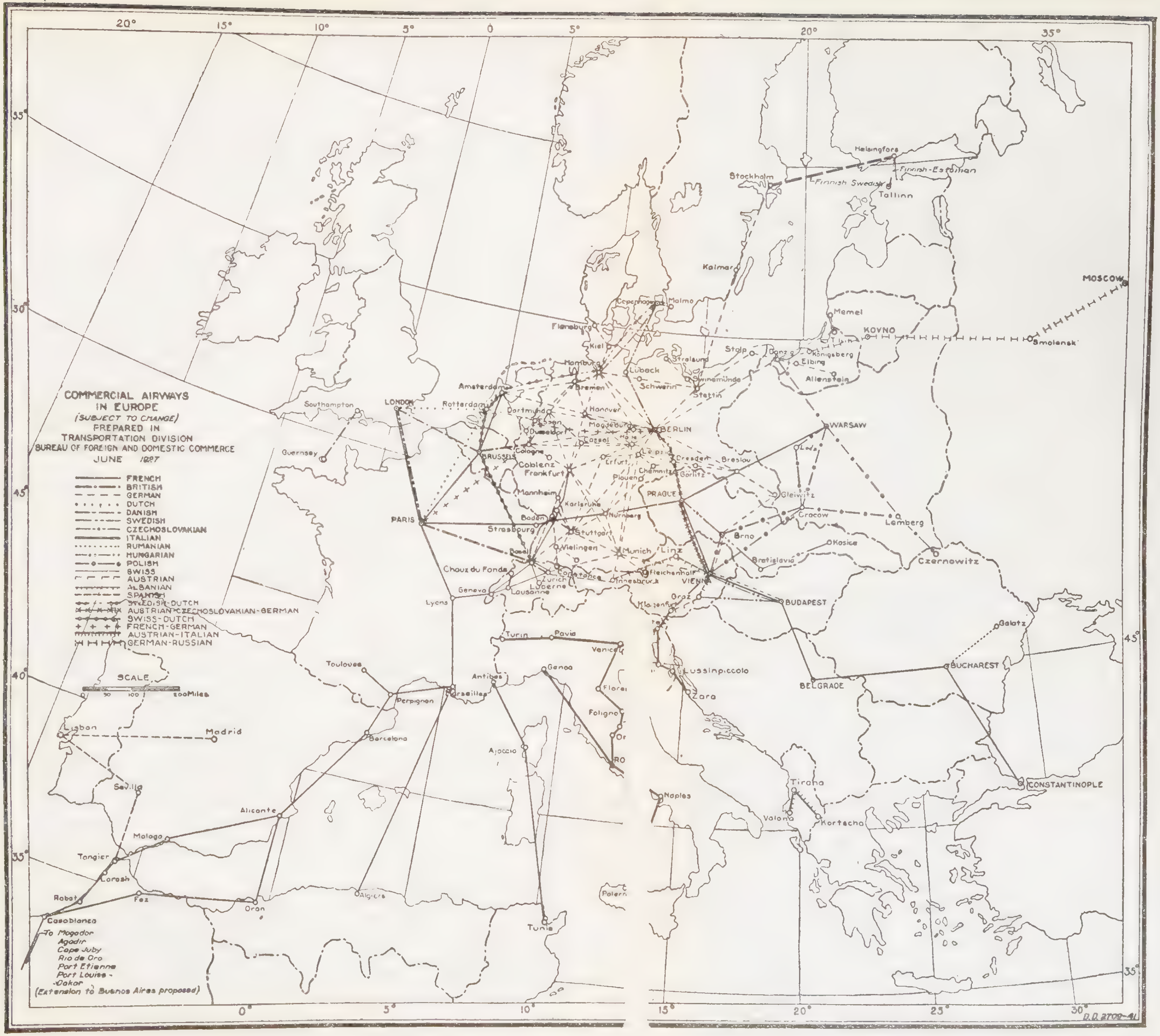
The following table, prepared by the United States Department of Commerce, gives the approximate route mileage of airways operated in the United States and in the principal European countries:

Lines operated by one country, 1927		Lines operated jointly by two or more countries, 1927	
German	11,005	German-French	570
		German-Russian	749
		German-Austrian-Czecho-Slovakian	345
United States	8,234		
French	7,419	French-German	570
British	2,045		
Dutch	1,695	Dutch-Swiss	398
Italian	1,390	Italian-Austrian	317
Swedish	992	Swedish-Finnish	259
Austrian	929	Austrian-German-Czecho-Slovakian	345
		Austrian-Italian	317
Polish	800		
Swiss	799	Swiss-Dutch	398
Danish	595		
Hungarian	315		
Spanish	200		
Albanian	137		
Rumanian	125		
		Finnish-Esthonian	53
Total operated by one country	36,680	Total operated jointly by two or more countries	2,691
Grand total	39,371		

Advantages of Air Service—Speed

It is perhaps desirable to summarize the advantages and disadvantages of the airplane for commercial use as compared with older forms of transportation.

The first, and by far the greatest, advantage of aircraft is speed. Commercial airplanes readily attain speeds of 100 miles per hour, whereas railroad trains rarely exceed 50 miles per hour, and steamships, 25 miles per hour. As against this, it is to be remembered that aircraft termini cannot be located in the centers of cities, so



EUROPEAN AIR ROUT 1927

that a considerable delay must be allowed for at each end of a trip for transporting freight or passengers between landing stations and city destinations. The English Civil Aerial Transport Committee of 1918 was of the opinion that this delay was so serious that the advantages of the airplane with respect to speed would not reveal themselves in the case of overland flights less than 300 miles in length, although shorter flights oversea might show a saving.[1] Terminal delays may be reduced by organization, but they are always serious.

It has been remarked that the long distances to be traversed in the United States afford an unusual opportunity to aviators as compared with those possessed by flyers in the smaller nations of Europe. Not unnaturally, Great Britain also perceives an important field for airplane service in linking up the elements in her widely scattered empire. Imperial communication was the subject of a special report to the Air Ministry in 1920 (Cd. 49), and was considered further at Imperial Conferences held at London in 1921, 1923, and 1926.[2] Services are now in operation between Cairo and Bazra, near the head of the Persian Gulf, and Karachi, in British India, a swell as local services in Australia, Canada, Newfoundland, and New Zealand.[3] France, likewise, attaches special importance to her long distance African service and Germany to the connections which she hopes ultimately to make with the Near East.

Other Advantages

In addition to its speed, the airplane shares with the auto bus the advantage of being able to render frequent service. Comparing the train with the airplane, the train as a traffic unit is large. There must, therefore, be wider intervals of delay for the accumulation of loads between successive shipments than in the case of the airplane. The airplane is a small unit, and therefore a flow of urgent traffic can be accommodated by a constant succession of departures from the aërodrome, with consequent time economy.

Finally, the airplane enjoys a great financial advantage in being spared the expense of a track. The expenses standing in lieu thereof are less, *viz.*, the cost of landing-grounds, wireless installations, weather-reporting services, and marking, lighting, and signaling of routes, especially at night or in fogs.

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[1] United Kingdom, Parliament, "Report of the Civil Aerial Transport Committee, with appendices." British Sessional Papers, 1918, vol. v, Cd. 9218, p. 43.

[2] British Sessional Papers, 1921, vol. xiv, Cd. 1474; *Ibid.*, 1923, vol. xii, Cd. 2000. See also Wakely, *Some Aspects of Imperial Communications*, 1924.

[3] Air Ministry, Directorate of Civil Aviation, "Annual report of the progress of civil aviation, April, 1, 1922–March 31, 1923," British Sessional Papers, 1923, vol. ix, Cd. 1900; *Flight*, December 30, 1926.

Disadvantages of Air Service

The fundamental disadvantage of the airplane is that it is a poor weight-carrier. To secure high speed, the commercial load must be kept within narrow limits, probably not to exceed 25 per cent of the total loaded weight of the plane. On this account, airplane transport must always remain auxiliary to surface transport.

Besides the fundamental disadvantage of small weight-carrying capacity per unit of power, the airplane suffers at present from other handicaps, probably only temporary in nature, that limit its popularity. Noise and restricted space reduce the comfort of passenger service, although the novelty of air transportation and the absence of dust do much to compensate for such drawbacks.

Reliability

More serious than temporary discomfort are the questions of reliability and safety. Up to the present time, air service is still inferior to rail in both of these respects, although a marked improvement has occurred during recent years. The United States Post Office announces that the transcontinental service completed 93.73 per cent of the trips it undertook in 1926, and the New York-Chicago night service, 94.22 per cent,[1] but of course this statement gives no indication of how closely the government planes adhered to schedule and so affords no basis for a comparison with rail accomplishment. According to British reports, 88 per cent of all scheduled flights on subsidized routes were completed within "subsidy time" during the twelve months from April, 1923, to March, 1924, inclusive. This is only a fair performance, especially as a delay resulting from aircraft failure is apt to be more considerable than one caused by train failure. Approximately one out of every fifteen flights on scheduled services were not completed upon the day on which the service was commenced, although the longest of the British-continental trips should not require more than four hours.[2]

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[1] *Aviation*, October 18, 1926, p. 668.

[2] "Annual report on the progress of civil aviation, 1923–1924," British Sessional Papers, 1924, vol. vii, p. 31, Cd. 2210.

Safety

In order to be popular, air service must be safe. "You have an engine which makes lots of noise," says the potential customer. "You go up in the air, and you may be killed." As against this, the air carrier can only point to a record which is certainly improving, but which does not yet approximate the safety achievement of travel upon land.[1]

In seven years, up to and including 1926, the British Imperial Airways and its predecessors flew over 5,000,000 miles, carrying 75,000 passengers, with only four accidents causing deaths of passengers. In 1926 the German Luft-Hansa flew 3,814,000 miles, carrying 56,268 passengers, with but one fatal accident. In France, in 1925, the operating companies flew 589,111 miles per fatality. During the year 1926 the United States contract air-mail operators flew 2,086,395 miles, and the government-operated mail service flew 2,292,263 miles, with no fatalities in either case.

It is dangerous to make comparisons between countries on the narrow basis that these figures provide, but it is evident, if we compare any of the figures with railroad accident statistics, that, good as the air record is, a great deal has still to be done before air travel becomes as safe as travel by land. In France, during the years 1920-1924, the fatal accidents to air passengers numbered 1.88 for every million passenger miles. The figures for British air companies were less, or .75, but the number of passengers killed per million passenger miles upon Class I railroads in the United States between 1920 and 1924 was only .013, or less than one-fiftieth part of the English air casualties, and a still smaller fraction of those in France. The comparison is less unfavorable in the case of injuries, but even here the air injuries were seven times the railroad injuries for the period. The encouraging fact is that progress is being made, yet the necessity for further improvement is too clear to be overlooked.

Airplanes v. Airships

In discussing the advantages and disadvantages of aërial navigation in preceding pages, the characteristics of the airplane rather than those of the airship have been principally regarded, and this is justified, because most air traveling is done to-day in heavier-than-air machines. In spite of its present comparative unimportance, the possibilities of lighter-than-air craft deserve and are receiving serious consideration.

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[1] *United States Air Services*, January, 1926, p. 25.

Advantages of Airships

The greatest merit of the airship as compared with the airplane is that its weight-carrying capacity is greater. Not only is this true, but the ratio of useful load to gross weight improves, in the case of the airship, with size, an advantage which the plane does not possess. Still again, the airship can remain suspended in air even when stationary, and for this reason, as well as because it is driven by several engines instead of by one, its crew is able to make current repairs in the air, instead of making a forced landing in case of trouble. The larger airplanes also are driven by several engines, but current repairs are still difficult, for obvious reasons. For this, as well as for other causes, the airship is safer than the airplane, although it is not immune from serious accident.

Disadvantages of Airships

On the other hand, the speed of the airship is less than that of the plane. Hence the airship meets keener competition from rail transport on overland routes, although on sea routes its advantages over the steamer are very great. As compared with the airplane, the cost of handling and housing airships is greater, and, until open-air mooring is fully developed, the regularity of airship services will be more adversely affected by high winds than that of airplane service. The airship is also many times as expensive as the airplane, and the gas upon which it relies is either costly and difficult to retain when helium is used, or inflammable when hydrogen is resorted to. It was the view of the British Civil Aerial Transport Committee in 1918, however, after consideration of arguments pro and con, that in journeys in which speed was not the most material factor, and particularly where passengers were being carried, and safety was consequently a paramount consideration, the airship offered advantages over the airplane in the way of comfort, ease of navigation, capacity for safe flight at low altitudes, and high ratio of disposable load.[1]

Airship Services in Europe

Neither the United States nor Great Britain has yet used the airship for passenger or commercial purposes. The German Air Travel Company, however, formed in 1910, and financed and managed by the Hamburg-Amerika Steamship Line, ran regular passenger excursions and town-to-town services during the years 1910 to 1914.

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[1] Final report of the Civil Aerial Transport Committee, *supra cit.*, pp. 10-11.

During this period its airships made over 800 flights, carrying 17,000 passengers, without a single mishap of any kind involving personal injury. After the Armistice, the Germans built the *Bodensee*, an airship carrying thirty passengers, which operated a daily passenger service from Berlin to Friedrichshafen between June and October, 1919. During the suspension of the railway traffic in November, 1919, a daily load of over one ton of mail was regularly conveyed.[1]

Airships may well be used, some day, for long-distance overseas transportation, supplemented by the use of planes for local gathering and distributing movements at the termini. Indeed, proposals for the establishment of Imperial Communication by lighter-than-air machines were presented to the Imperial Conference of Dominion Premiers in 1921, and failed of accomplishment only because the Dominions, as a whole, did not feel prepared to incur the necessary expense.[2]

Air-Mail Transport

In describing the extent of traffic which aircraft have been able to command, it is desirable to separate mail traffic from other forms of business.

Air-mail transport has been undertaken in most important American and European countries, and has improved maximum dispatch, as we have already seen in the United States, for long distance communications of unusual importance. It is now possible to post a letter in central London for delivery in Paris on the same day. The saving on longer trips, such as that between New York and San Francisco, has already been referred to. In less developed portions of the world, the economy of time through the use of airplanes for mail deliveries is enormous. The Belgian service to interior Africa saved something like eleven days when it was introduced, and the British air mail from Cairo to Bagdad carries letters in one or sometimes in two days, instead of in the twenty days necessary for communication over the old route *via* Bombay and Karachi.[3]

As for the type of correspondence which is forwarded by air, the

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[1] United Kingdom, "Proceedings of the Air Conference, 1920." British Sessional Papers, 1921, vol. viii, p. 112. Cd. 1157.

[2] United Kingdom, Air Ministry, "Proceedings of the Second Air Conference, held on 7th and 8th February, 1922." British Sessional Papers, vol. xi, 1922, p. 12.

[3] United Kingdom, Air Ministry, "Proceedings of the Second Air Conference," *sup. cit.*, p. 89.

United States Post Office reports that its first air consignments were highly miscellaneous. They included thousands of souvenir post cards, candy, samples, flowers, live chicks, a suit of clothes that cost possibly fifteen dollars and carried eighteen dollars postage—in short, curiosity and publicity material. This traffic, however, rapidly declined, and in its place a more permanent business developed. Banking mail now predominates. After the bankers in the line of patronage come the transportation and shipping people. The great steamship companies have much correspondence passing between the Atlantic and the Pacific coasts, of which a proportion goes by air. Import and export houses, manufacturing concerns doing a nation-wide business, publishers, and advertising agencies, are among the other users.[1]

Volume of Air Mail Still Moderate

Air-mail rates are higher than those for ordinary postal service, although they have been steadily reduced. At present, the air-mail rate from London to Paris is 2d. per ounce, or approximately four cents, that from Cairo to Bagdad, 6d., or roughly twelve cents. In the United States the postage rate is now 10 cents a half ounce or fraction thereof irrespective of distance. These rates are low enough to encourage a growing traffic, although the volume of the traffic is still small as compared with that carried by other agencies. In 1926, the reported weight of letters carried by the Air Mail Service was 177 tons. This was substantially all the mail handled.[2] Rail-

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[1] Henderson (Second Assistant Postmaster-General), "Pioneer Work of United States Air Mail Service," *Congressional Digest*, April, 1925.

[2] The weight of letters carried by air mail in the United States since 1918 has been as follows:

Year	Weight of letters carried by air mail (in tons)
1918	8.9
1919	115.2
1920	263.2
1921	560.4
1922	612.3
1923	848.4
1924	750.0
1925	116.3
1926	176.8
1927 (6 mos.)	310.6

Until June 30, 1924, the matter passing *via* air mail was composed entirely of letters mailed at the two-cent rate. There was no connected service entirely across the country; it was merely a sort of relay between the air-mail service and the trains. Commencing with July 1, 1924, a through transcontinental air-mail service was inaugurated and a special rate of eight cents an ounce or fraction thereof for each zone was put road mails have not been weighed in the United States since the adoption of the space system of railway-mail payment, but in 1917 the tonnage was about 10,000 tons per day,[1] and this is a sufficiently violent contrast to make exact comparisons unnecessary. Mail traffic in Europe is larger than in the United States, but not notably so, a fact to be explained by the excellence of existing services, and the newness and irregularity of transport through the air.

Statistics of Freight and Passenger Movements by Air Lines in the United States

The United States Department of Commerce publishes the following statistics of air traffic in the United States:

Period	Passengers carried	Mail carried (Tons)	Express carried (Tons)
January to December, 1926	5,872	405	867
January to June, 1927	1,891	311	523

Only eight contract mail routes in this country publish passenger rates, although the majority accept passengers who request passage. Nearly all of the express tonnage consists of Ford goods carried by Ford planes.

Statistics of Freight and Passenger Movements by English, French, and German Air Lines

In England, the freight and passengers handled by air transport, excluding irregular flights for hire, have been as follows:

BRITISH CIVIL AIR TRANSPORT (INTERNAL AND CONTINENTAL)[2]

Year ending	Passengers carried	Cargo carried (Tons)
31st December, 1919 (8 months)	870	30.0
31st December, 1920	5,799	137.0
31st December, 1921	5,256	19.4
31st December, 1922	10,393	214.6
31st December, 1923	15,552	328.1
31st December, 1924	13,601	542.8
31st December, 1925	11,193	550.0
31st December, 1926	16,775	679.0

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into effect, which therefore restricted the matter passing through the air mail to letters bearing that postage rate. The United States Post Office complains that the business of using the air mail has not been sold to the public, and it declares that the greatest need of the service is more custom, not better planes (W. J. Glover, Second Assistant Postmaster-General, in *Aviation*, October 18, 1926, p. 668).

[1] Railway Mail Pay, 56 I. C. C. 1, 13, 1919.

[2] Air Ministry, Directorate of Civil Aviation, "Annual report on the progress of civil aviation, April 1, 1926–December 31, 1926. Neither the figures for passengers

More than half of the flights are made and three-quarters of the passengers are carried between England and the Continent. British aircraft carry 52 per cent of the passengers who travel upon this route, and make 55 per cent of the total number of flights. Approximately 75 per cent of all passengers go during the spring and summer months, from April to September, inclusive.

The record of the French civilian lines is as follows:

TRAFFIC ON FRENCH CIVILIAN LINES, 1919–1926[1]

Year	Passenger stages	Express stages (Tons)	Mail stages (Tons)
1919	588	9.3	1.0
1920	1,771	84.9	17.3
1921	10,619	288.6	38.4
1922	9,502	613.3	184.8
1923	11,638	1,068.1	362.0
1924	16,729	967.4	587.3
1925	19,768	1,046.2	981.7
1926	18,861	1,108.6	654.4

In Germany, the growth of aërial transport has been retarded by the terms of the Peace Treaty and of the ultimatum of the London Conference of 1921, which forbade the construction of aircraft of any description.[2] This restriction was modified in May, 1922, to permit the construction of civil aircraft, although at the same time it was declared that the following types of heavier-than-air craft should be deemed to be military:

(1) Single-seater machines with power exceeding 60 h.p.;

(2) Machines that could fly without a pilot;

(3) Machines with any form of armor or protection or with fittings to take any form of armament . . . ;

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nor those for cargo in the table given in the text are entirely comparable throughout. The statistics of passengers for 1925 and 1926 represent the actual numbers of individuals carried, while those for earlier years show the number of persons carried over each stage of a route. The cargo figures for 1925 and 1926 represent the total paying cargo carried—that is, goods, mails, and excess baggage. Prior to 1925, the totals do not include a small amount of goods carried between aërodromes on the Continent.

[1] *Commerce Reports*, March 29, 1926, p. 799. Like most air statistics, the table in the text needs interpretation. "Stages" means that part of the total route between regular stops. Thus, if one passenger is carried from Constantinople to Paris and there are five regular stops on this route, the report will show five passenger stages. The figures are not, moreover, confined strictly to French lines, but include foreign lines with a terminus in France. The French lines alone, in 1926, carried 13,633 passengers, 844.4 tons of express, and 339.3 tons of mail. The extraordinary amount of mail carried in 1925 was due to the war in Morocco.

[2] United Kingdom, Air Ministry, "Proceedings of the Second Air Conference, 1922," *sup. cit.*, p. 13.

(4) Machines exceeding a maximum ceiling, with full load, of 4,000 meters . . . ; and

(5) Machines with full load at an altitude of 2,000 meters exceeding a speed of 170 kilometers an hour.

With respect to lighter-than-air craft, the classification was made to depend upon size. Airships, that is to say, which exceeded the following cubic capacity were to be deemed military: (a) rigid airships, 30,000 cubic meters; (b) semirigid airships, 25,000 cubic meters; (c) nonrigid airships, 20,000 cubic meters.[1]

In 1926, finally, the Belgian, English, French, Italian, and Japanese Governments agreed to withdraw the organization which they had created to control German aircraft construction,[2] as soon as the German government should have promulgated an ordinance forbidding the construction of armored aircraft, aircraft fitted to receive armament, or aircraft that could fly without a pilot, and should have undertaken to keep the growth of German civil aviation within the limits of what was described as a "normal development." The conception of normal development was made specifically to include commercial, training, and sport machines—not commercial machines alone. Special clauses of this same ordinance were to be framed so as to prevent: (1) the construction or importation of pursuit planes except in limited numbers and for specified nonmilitary purposes; (2) the payment of national or local subsidies to organizations engaged in flying for pleasure or in training pilots for this purpose; (3) any connection with military aviation on the part of public bodies charged with the organization or the administration of an armed force; and (4) the participation of the militia or of the marine in aviation of any sort.[3]

This arrangement of 1926 was distinctly more comprehensive than the one of 1922, but there seems to be nothing in it which limits the size or radius of action or operating efficiency of German aircraft, nor is there anything to prevent a rapid increase in the number of German freight and passenger machines so long as commercial employment for them can be found.

The following table presents the statistics of German air traffic from 1922 to 1926:

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[1] United Kingdom, Air Ministry, Directorate of Civil Aviation, "Half-yearly report on the progress of civil aviation, October 1, 1921–March 31, 1922." British Sessional Papers, 1922, vol. xi, p. 23.

[2] Comité de garantie aéronautique.

[3] *Revue Juridique Internationale de la Locomotion Aérienne*, Juillet-Août-Septembre, 1927, pp. 276–280.

GERMAN AIR TRAFFIC OVER REGULAR ROUTES, 1922–1926[1]

Year	Passengers carried	Freight carried (Tons)	Mail carried (Tons)
1922	8,016	20.2	.....
1923	10,572	91.0	10.4
1924	20,869	151.6	26.4
1925	55,000	521.0	287.0
1926	56,268	706.7	332.1

German air services are today the most complete of any European country.

Volume of Air Business Still Small

Study of European conditions with respect to air transport reveals several very definite facts.

The figures collected in preceding pages show that the air traffic of the world is still altogether insignificant in amount, although it is growing, and has not reached its maximum possibilities even in the present state of the art of flying. The irregularity of the progression of passenger movements by French, or of freight movements by English lines, suggests the experimental character of the business and the uncertainty with which patrons still regard it.

Tendency Toward Concentration in Management

There is a marked tendency toward the concentration of air transport in the hands of a few large companies. The first few years of civil aviation witnessed the birth of a large number of flying organizations, and the English Government, at least, showed some tendency to encourage this wide participation in aërial navigation, on the ground that it would hasten technical progress and multiply facilities that might serve the nation in time of war. Competition was, moreover, expected to stimulate efficiency and to control prices. It soon became apparent, however, even in England, that technical progress depended upon the investment of large amounts of capital, and that a policy of regulated monopoly would be more likely to attract this capital than a policy of competition. There was sufficient rivalry between the aircraft of different countries to supply any needed incentive, and, finally, whether it provided incentive or not, competition between subsidized services came to be regarded as contrary to the public interest.[1]

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[1] In 1925 both passengers and goods were counted according to the number of "stages" covered, but complete journeys only were taken into consideration in arriving at the figure for 1926. It is stated that after the necessary allowances have been made for this difference in the system of calculation, the number of passengers carried in 1926 shows an increase of 50.3 per cent over the figure for 1925, while baggage and freight shows an increase of 115 per cent, and mails and newspapers an increase of 86.4 per cent. The statistics for mail in 1922 are not available. The freight tonnage for this year is that for the Königsberg-Moscow line only; freight figures for other lines are not available.

The present situation in the principal European countries may be summarized by saying that in England the routes out of London are all operated by the Imperial Air Transport Company, leaving only the service between Carlisle and Belfast to an independent company, the Northern Airlines, Ltd. In France, there are four companies, but out of the four, three are responsible for 96 per cent of the miles flown.

TRAFFIC OF FRENCH CIVIL AIR LINES IN 1924, BY COMPANIES[2]

Company		Miles flown	Passengers carried	Tons express	Tons mail
Air-Union	Paris-London	301,844	5,622	489.1	.9
"	Antiles-Ajaccio	38,316	298	1.6	(57 lbs.)
Société Générale	Paris-Brussels-Amsterdam	85,823	1,362	31.8	(143 lbs.)
Franco-Roumaine	Paris-Bucharest	622,124	2,092	310.6	7.0
"	Prague-Warsaw	108,842	148	51.3	.7
Latecoere	Toulouse-Casablanca	837,551	6,167	77.5	541.1
"	Casablanca-Oran	99,945	733	2.6	19.7
"	Marseilles-Perpignan	114,390	225	1.2	15.2
"	Oran-Alicante	57,814	82	1.7	2.7
Total		2,266,649	16,729	967.4	587.3

In Germany, two powerful organizations, the Junkers Luftverkehr and the Deutscher Aero Lloyd, dominated the business of civil aërial transport until the autumn of 1925. At this time the Junkers Company became financially involved through over-expansion, and the German Government, while extending aid, forced its consolidation with the Aero Lloyd in a fusion called the Luft Hansa. This company is now operating exclusively throughout Germany, and has recently extended to France, in collaboration with the French air-transport services.[3] Likewise in other countries the tendency to concentration is marked, although space does not permit an exhaustive consideration of the facts.

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[1] Air Ministry, Civil Air Transport Subsidies Committee, "Report on government financial assistance to civil air transport companies." British Sessional Papers, 1923, vol. ix, Cd. 1811.

[2] *Commerce Reports*, December 21, 1925, p. 687. The Air-Union acquired the Antiles-Ajaccio line in 1926 (*Aviation*, September 27, 1926).

[3] *Aviation*, July 12, 1926, p. 58.

Government Assistance and Regulation

The third and last generalization which it is safe to venture at the present time is that civil aviation does not pay from a business point of view. The sufficient evidence of this fact is that most air services are subsidized. A few words may be said on this point concerning the character and extent of government relations with aviation.

Government interest in aërial navigation takes three principal forms. The first of these is regulative, and consists partly in the development of a system of licensing and control intended to promote safety of operation, partly in defining the rights of flyers in terms of existing national laws, and partly in negotiating treaties and conventions to permit of international service.

In addition to this necessary legal activity, governments have assumed a large degree of responsibility in marking routes, rendering free meteorological information, establishing relay stations and emergency landing-grounds, and in providing terminal facilities, either free or at less than commercial expense to users.

Finally, governments have granted direct financial assistance to operating companies.[1]

Legal Aspects of Aërial Navigation

A convention relating to international air navigation was negotiated at a European conference in 1919, and has since been signed by Belgium, France, Great Britain, Canada, Australia, South Africa, New Zealand, India, Irish Free State, Bulgaria, Chile, Czecho-Slovakia, Greece, Italy, Japan, Persia, Poland, Portugal, Rumania, Kingdom of the Serbs, Croats, and Slovenes, Siam, Sweden and Uruguay. Regulations have also been prepared under this convention and published by all of the larger European states, and an international commission was created by the conference itself to study and develop aërial law upon the foundation which the convention had laid down. Both national and international regulations deal with the inspection of planes, licensing of pilots, the determination of rules of the road for air flying, the marking and lighting of aircraft, and other similar matters. Rules deal also with questions of legal theory which must be settled on some more or less satisfactory basis before flying is undertaken upon a large scale. An example of this is the modification of the property rights of landowners embodied in most codes. The ancient conception of private property extended the possession of the owner of land indefinitely upward into the sky. Obviously, an owner cannot enforce such rights against aerial trespassers, or, if he can, then flying becomes impossible from any practical point of view.

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[1] An exhaustive list of forms of government activity would include government research activity in the field of flying and aircraft design, as well as the sale of surplus government planes to private parties.

If, now, the property rights of private individuals are to be limited in their extension toward the sky, how is it to be with the sovereignty of governments? There was opinion before the World War in favor of the doctrine that the air is free to all nations, resembling in this respect the high seas rather than the occupied land. England, however, never assented to this principle, and during and since the war it has been generally abandoned, because public opinion everywhere has recognized that control of the air above a country is vital to national defense.

Allied with the question of national sovereignty over the air is the problem of international intercourse through the air. The international convention of 1919 bound its signatories to accord freedom of innocent passage above their territories and territorial waters to the aircraft of the other contracting states, providing that the conditions established in the convention were observed. These conditions included the observance of determined routes, conformity with special customs regulations, and the acknowledgment of the jurisdiction of the local government over certain classes of offenses, especially such as affect persons or property in the subjacent state.

There are also questions of private law which air navigation presents in a new light. Where, for instance, shall a contract executed in the air be considered to be made, and under the laws of what country shall it be enforced? The convention of 1919 provides that "legal relations between persons on board an aircraft are governed by the law of the nationality of the aircraft." But Spaight quite properly points out that under this rule, a contract made between two Englishmen on an air journey between London and Manchester would, if the airplane upon which they traveled were Danish, be governed by Danish law, although the contract might require performance in England and neither party to it thought of leaving his native land.[1]

Problems of these various types are certainly not insoluble, but the fact that they arise shows how aërial transport brings nations into contact upon a new dimension, and suggests that governments will find it necessary to revise existing laws and conventions in many ways to adapt them to the reasonable necessities of this new intercourse.

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[1] Spaight, *Aircraft in Peace and the Law*, London, 1919. See also Schreiber, "Die moderne Entwickelung des Luftfahrtrechts," *Weltwirthschaftliches Archiv*, Januar, 1927.

Administrative Control of Aircraft in the United States

In the United States, the formulation and administration of air traffic rules for interstate commerce is intrusted to the Secretary of Commerce. Regulations effective December 31, 1926, require licenses for planes and pilots and lay down rules for flying intended to reduce the number of accidents. Thus, airplanes taking off must give way to planes landing. Airplanes must give way to airships, and airships to balloons. The aircraft having another aircraft on its right must give way when their respective paths are crossing. When flying over congested areas, the altitude must be not less than 1,000 feet, and elsewhere not less than 500 feet. The regulations quoted are typical of a considerable body of administrative directions framed independently of the international convention of 1919, although not necessarily in conflict with its provisions.[1]

Federal air-traffic rules apply whether the aircraft is engaged in commercial or noncommercial, or in foreign, interstate, or intrastate navigation in the United States, and whether or not the aircraft is registered or is navigated in a civil airway. This exercise of authority by the federal government over private and intrastate operations appears at first sight to be inconsistent with the division of power between state and national governments which will be discussed in later pages of this book. It is based, however, upon the right of the federal government to protect interstate and foreign commerce, and the necessity for uniform regulation in the field of air transport is so evident that it is altogether likely that the federal rules will be sustained.

Indirect Government Aids

Public provision of aërodrome facilities, landing-fields, route lights, and similar apparatus is partly a concession to an infant industry. It is also a recognition of the fact that some important ground aids to flying, such as route lights or wireless metereological service, are as useful to the general flying public as to the company that incurs the expense of establishing them, where they are privately owned. The public authorities can fairly be asked to finance facilities which are not susceptible of exclusive appropriation, and to recover the expenses, if it be thought desirable to recover it, from those who benefit from the installation.

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[1] United States Department of Commerce, Aëronautics Branch, "Air Commerce Regulations, effective December 31, 1926."

In France, all aërodromes and landing-fields used by commercial aviation companies are owned and maintained by the French government. The companies pay for accommodations and services rendered. The government furnishes wireless metereological service, aids in the planning of new routes, and conducts experiments in night flying.[1]

In Germany, local authorities have been enterprising in constructing aërodromes as municipal or commercial ventures. The government provides meteorological service, and publishes a certain amount of information intended to popularize air transport as a safe and economical means of travel.[2] In England, likewise, the government builds aërodromes, renders wireless and meteorological services, prints maps, and conducts researches in aircraft design and operation.

In the United States, the Air Mail Service has established a lighted airway between New York and Salt Lake City, 2,040 miles, and between New York and Boston, 219 miles, using beacon lights mounted on fifty-three foot towers, routing beacons, and, at landing-fields, flood lights and boundary lights. Powerful radio sets at all regular or terminal fields except Des Moines, Iowa, and Rawlins, Wyoming, transmit weather reports, report plane movements, and establish communication between fields and between the offices of the Second Assistant Postmaster in Washington and the general headquarters at Omaha.[3]

The general responsibility for the promotion of aërial commerce rests with the Department of Commerce, not with the Post Office Department. By legislation approved May 20, 1926,[4] Congress made it the duty of the Secretary of Commerce to foster, as well as to regulate, air commerce, and for this purpose:

a. to encourage the establishment of airports, civil airways, and other air navigation facilities;

b. to make recommendations to the Secretary of Agriculture as to necessary meteorological service;

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[1] *Commerce Reports*, December 21, 1925, p. 687.

[2] *Commerce Reports*, December 14, 1925, p. 623.

[3] Annual report of the Postmaster-General, 1925, pp. 29–31.

[4] Air Commerce Act of 1926, No. 254, Sixty-ninth Congress.

c. to study the possibilities for the development of air commerce and the aëronautical industry and trade in the United States and to collect and disseminate information relative thereto and also as regards the existing state of the art;

d. to advise with the Bureau of Standards and other agencies in the executive branch of the government in carrying forward such research and development work as may tend to create improved air navigation facilities;

e. to investigate, record, and make public the causes of accidents in civil air navigation in the United States;

f. to exchange with foreign governments through existing governmental channels information pertaining to civil air navigation.

The Department of Commerce takes these responsibilities seriously and is proceeding with a lighting program and with the development of weather reports and radio service. It expected, during 1926, to light 1,287 miles of contract air routes other than the transcontinental routes with lighted fields every thirty miles and radio beacon towers every two hundred miles. The department plans also to establish twenty-two new "upper air" weather stations along the airways, and to be prepared to inform pilots of weather conditions in sections over which they intend to fly. The establishment of airports themselves, except in the matter of emergency landing-fields, is thought to be outside the legitimate scope of the activities of the federal department, although it may be taken up by town and city authorities.[1]

United States Army Model Air Service

Besides the assistance given to private enterprise through the marking of air routes, the United States army operates, for experimental purposes, a so-called model airway. Flights on this airway began on June 19, 1922, between Washington, D. C., and Dayton, Ohio, and the routes have since been extended to Long Island, New York, upon the east, and to San Antonio, Texas, and to Detroit, Michigan, upon the west. These military planes carry no mail, freight, or passengers, except officers and government material; the purpose of their operation is to develop types of planes, with equipment especially designed for bad-weather flying, to perfect a cost-accounting system, and, in general, to accumulate data which may be of service to new commercial organizations intending to enter the field of aviation. In the years 1923 to 1925, inclusive, the model army service flew a total of 797,740 miles, with only one serious accident and no fatalities.[1]

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[1] *Aviation*, October 11, 1926, p. 636.

Direct Subsidies—Mail Contracts

Direct government aid in Germany and the United States is extended through air-mail contracts. In Germany, the companies engage to carry mail at a fixed rate up to a maximum of one hundred kilos per trip. The payment is made undiminished, even though only a small part of the 100 kilos is carried. In the United States, the companies receive four-fifths of the revenue from the air mail.[2] It is impossible to say how much aid is actually provided through these German and American contracts, in the absence of full statistics of cost of operation of the service, but the assistance is intended and believed to be considerable.

Direct subsidies are also granted in Germany by both federal and local bodies. Federal grants are made by the Reichstag through the Air Department of the Ministry of Transport and Communications in the form of a bonus of approximately two marks for every kilometer flown.[3]

French Subsidies

The French subsidy contracts are based upon a decree of December 27, 1924. They include three elements—first, a purchasing premium, amounting as a rule to half the final cost of equipment; second, a premium in proportion to the distance flown, increasing with the size of the airplane employed; and third, a premium that varies with the useful or pay load. Thus the Aëro-Union receives 15.75 francs for each kilometer flown with Goliaths and 7 francs for each kilometer flown with Breguets or Spads, and, in addition, 1.75 francs for each 200 kilos of useful load capacity in flight. In case the companies show a deficit at the end of the year, an additional premium is paid to cover the loss, up to a maximum of one-half of that already paid on the kilometer and useful-load capacity basis.

In 1927 the government budget allotted 78,650,000 francs to air subsidies. The relation of subsidies to earnings is shown in a report made to the French Parliament in connection with the 1926 budget for aëronautics, in which it appears that the average receipts of the four (then five) major lines during the first nine months of 1925 were 10.97 francs per ton-kilometer. The average state subsidy given these lines was 60.32 francs per ton-kilometer, or over five times as much.[1]

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[1] Kennedy, *An Introduction to the Economics of Air Transportation*, pp. 55–67; Report by the Joint Committee on Civil Aviation, *sup. cit.*, p. 58.

[2] 43 Statutes at Large, 805, 1925.

[3] *Commerce Reports*, April 26, 1926, p. 242.

The French system of subsidies has been criticized upon the ground that it offers no incentive to the development of business. French airplanes carry, on the average, only about half a load, and, indeed, several companies have been charged with making flights with empty machines, solely on subsidy account.[2] This last charge may be true or untrue, but in any case, the assistance to private aircraft operations is obviously on liberal terms.

English Subsidies

In England, the terms of the subsidy are embodied in a contract concluded in 1923 between His Majesty's Government, represented by the president of the Air Council, and the Imperial Air Transport Company, Ltd. Under this contract, the company agreed to establish an efficient air service between London and Paris, London and Brussels, London and Amsterdam, and between Southampton and the Channel Isles, and to complete in each of the first four years of the agreement a minimum mileage of 800,000 miles with British-built and registered heavier-than-air aircraft carrying or available to carry passengers, mails, and freight. The company further undertook to keep records and accounts for the information of the government, to pay standard wages, and to make experiments at government expense. In return, the government agreed to provide aërodrome facilities on payment of approved fees, and to pay a direct subsidy in the annual amount of £137,000 during the first two years, and thereafter in declining amounts until, in the tenth year, the subsidy should cease with a last payment of £32,000, making a total of £1,000,000 extended over the period. In case the earnings of the company in any year exceeded 10 per cent upon the paid-up capital, one-third of the excess was to be used to repay previous subsidies, and one-third was to be devoted to the improvement of the company's air service and to the development of British civil air transport. The remaining one-third might be distributed in dividends. To further protect the government the president of the Air Council was to nominate two of the directors of the company.[3]

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[1] *Aviation*, August 9, 1926, p. 256.

[2] United Kingdom, Air Ministry, "Proceedings of the Second Air Conference, 1922," *sup. cit.*, p. 30.

[3] Air Ministry, "Agreement made with the British, Foreign, and Colonial Corporation, Ltd., providing for the formation of a heavier-than-air transport company, to

Reasons for Small Volume of Air Traffic

It is probably true that the poor financial showing of most European air services is due to a small volume of business, which renders the overhead upon each trip exceedingly heavy. This small volume is, in turn, due to the newness of the service, to its real and imagined dangers, to its discomforts—in short, to the disadvantages mentioned earlier in this chapter, and, in addition, to the high rates which air companies have felt compelled to charge.

The following table compares the cost of rail and airplane passenger transportation upon a few selected routes in the United States and in Europe:

COMPARATIVE FARES BY AIR AND RAIL

Point of origin	Point of destination	Rail		Air	Rail mileage
		First class	Second class		
		$	$	$	
London	Paris	16.99	12.00	30.65	287
Berlin	Frankfort	15.47	10.47	19.04	335
Berlin	Vienna	19.52	12.85	24.99	454
Paris	Brussels	5.41	3.67	11.85	193
Paris	Strasbourg	8.97	6.04	14.80	313
Paris	Warsaw	39.50	27.65	67.15	1,080
Los Angeles	San Francisco	16.86	.....	45.50	471

The fares for air travel represented in the foregoing table range from 4.7 cents to 6.2 cents per mile upon the continent of Europe, and from 9.7 cents to 10.6 cents per mile upon the Pacific coast of the United States and for the cross-Channel services. The difference between the cost of first-class rail and that of air transportation is greatest in the United States and in England, and least in Germany, where the air rate exceeds the rail rate only by about 25 per cent; but except, perhaps, in this last-named country, air travel is still a luxury that can be afforded only by the wealthy, by those who have desperate need of speed, and by persons who are attracted by the novelty of the service and pay for it as they would for any

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be called the Imperial Air Transport Company, Ltd." British Sessional Papers, 1924, vol. xiii, Cd. 2010. Between 1921 and 1924 the British Government had spent between five and six hundred thousand pounds on aircraft subsidies, including grants in aid of equipment and the value of equipment presented to the companies. The terms of the successive arrangements during these years were, however, unsatisfactory, and the agreement described in the text was made effective beginning April, 1924. See "Report of Civil Air Transport Subsidies Committee," *sup. cit.*

other occasional entertainment. It is of some interest to observe that out of 12,100 passengers on the London-Paris route in 1922, 6,600 were aliens and only 5,500 British, and that most of the aliens were Americans.[1] If companies can obtain sufficient traffic from these classes, the present fares may be profitable, but it is likely that more must be done in the future than in the past to attract a less financially capable clientele.

The Future of Air Transport

It is altogether too early to predict what the future of aërial transport will be. Captain Guest, British Secretary of State for Air, declared frankly before the Second British Air Conference in 1922 that in his belief, taking a long view of aircraft traffic in general, there was little or no prospect of a real commercial success being obtained, either in England or in Europe, in competition with the railroads of these countries, and he warned his hearers not to expect too much even of cross-Channel services, which might at first sight be expected to make a better showing. The real opportunity for aërial navigation, Captain Guest found in long distances such as that from London to India, or, as he might have added, from San Francisco to New York.[2]

On the other hand, the Director of Civil Aviation of the Air Ministry stated his view in 1923 that on long routes the public would certainly patronize the air mail, even though a surcharge were demanded, and that within a few years passengers would be transported at a charge of 2½d. per mile.[3] If these expectations are realized, air transport will take a routine and useful part in the transportation of passengers and special kinds of freight, although the older forms of transport will long continue to provide most of the facilities for movement which modern communities require. At the present time, the limited tonnage handled by commercial airplanes in Europe and in the United States, and the failure of the operating lines to cover their expenses by their operating receipts, lend support to the statement that air services are still experimental and that they rely for their continuance less upon a commercial demand than upon the importance attributed to commercial aircraft as auxiliaries to a military force.

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[1] United Kingdom, Air Ministry, "Proceedings of the Third Air Conference, held on 6th and 7th February, 1923," p. 18, British Sessional Papers, 1923, vol. ix, Cd. 1848.

[2] United Kingdom, Air Ministry, "Proceedings of the Second Air Conference," *sup. cit.*, pp. 6–7.

[3] "Proceedings of the Third Air Conference, 1923," *sup. cit.*, pp. 27, 36.

Recent Progress in Great Britain

During the past seven years the British Government has conducted a number of theoretical investigations and has made certain practical experiments which will doubtless further airship development. The investigations relate mainly to the calculation of stresses to which airships are subject, either from the load that they carry or from aërodynamic pressure. These inquiries, when they are complete, will doubtless result in improvement in airship design. The government has experimented with engines adapted to the use of other fuels than petrol, it has also erected successful mooring masts for the terminal handling of airships, and it has collected extensive meteorological data along the various routes between Great Britain and India.

In 1924, the government definitely adopted an experimental program to extend over three years and to cost £1,350,000,[1] under which much of the work just referred to has been carried out. The program is intended to lead up to two practical operations:

1. The construction of two airships of such improved speed, range, and load-carrying capacity as will enable them to make long voyages overseas with a substantial margin of lifting power; and

2. The carrying out of successful flights to and from an overseas terminal, in order to demonstrate that these airships are suitable for the work for which they are designed.

The two airships of the 1924 program are being built, but have not yet been delivered. British statesmen hope that aircraft of this type will strengthen the ties which bind together the widely scattered parts of the British Empire and so produce political as well as commercial effects.[2]

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[1] The actual cost is now expected to be between 1½ and 1¾ million pounds.

[2] United Kingdom, Air Ministry, "The Approach towards a system of Imperial Air Communications," London, 1926.

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CHAPTER VIII

THE EFFECTS OF IMPROVED TRANSPORTATION UPON INDUSTRIAL SOCIETY

Modern Transportation Machinery of Recent Origin

We may pause at this point to make certain general observations regarding the transportation system which has been described in previous chapters.

It is well to remember, to begin with, that improved machinery for the movement of passengers and goods is a recent acquisition of civilized society. The oldest portion of our modern plant is the canal or improved waterway. River navigation is as old as ships, and canals are at least as old as the Pharaohs. But even in these instances, the changes in technique which followed the use of steam were so great that the waterway of the nineteenth century may be considered a distinct addition to the transportation apparatus of earlier times.

For the rest, the commercial airplane has been important for less than 10 years, the gasoline-driven motor-vehicle for less than 25 years, the pipe line for only about 60 years, the railroad for 100 years, and the street railway or tramway for approximately 125 years.

Nature of Advantages Received

If we ask ourselves what contribution the new mechanical devices for transport have made to modern life, the answer must be that they have rendered movements more regular and calculable, safer, more rapid, and more cheap. It is hardly necessary to produce evidence to support these statements if we recall that in England and France as late as the early nineteenth century the chief reliance for passenger travel was the horse and the stage-coach, and for freight the pack train and the wagon. Railroads move freight to-day at speeds of approximately 15 miles per hour, at a cost of little over 1 cent per ton per mile, and subject to damage which is less than 1 per cent of the freight rate. The speed of early nineteenth-century wagons probably did not exceed 3 or 4 miles per hour, costs ranged from 6½ cents to over 20 cents per ton mile, and damages were certainly greater than in railroad transportation of the present day, though by how much it is impossible to say. The difference between pre-railroad and modern passenger movements is less, but it is still great.

Conditions Which Make Possible Improvements in Transportation

Doubtless it should be pointed out that modern transportation methods are not the result of a revolution caused by a few mechanical inventions, as is sometimes assumed, but that they are also the outcome of long, slow evolution. The breaking down of political barriers, the shifting of power from military, ecclesiastical, and landholding groups to classes interested in trade and industry, the diffusion of knowledge through better education and through the use of the printing press, the development of industrial processes not directly connected with transportation—all these and many other influences interacted with advances in transportation technique to encourage the movement of passengers and of freight.

The following observations may be made, if we compare modern methods of land movement with those in use in England and upon the continent of Europe as late as the eighteenth century:

Effects of Improvements in the Speed of Transportation

Generally speaking, better transportation has produced both relative and absolute effects. Thus the construction of railroads has extended to points away from the water lines the advantages formerly enjoyed by communities situated upon the coast, or on interior rivers and canals. This may be regarded as a relative change, altering the comparative position of different groups of people, while, on the other hand, the fact that the railroad has increased the productivity of labor, both along navigable streams and at interior points, may be regarded as an absolute change, affecting all workers, wherever situated and in whatever work engaged. Let us consider in some detail effects which have been brought about by the important advance in industrial technique connected with the name of railroad.

Among the most significant results of improved transportation have been those caused by the reduction in time in which transportation service has come to be performed.

Discussing the advantages of greater speed of carriage, an early writer said:

> "The extent of soil by which great cities are supplied with perishable articles of food is necessarily limited by the speed of transport. A ring of country immediately about a great capital, is occupied by market-gardens and other establishments for supplying the vast population collected in the city with their

> commodities. The width of this ring will be determined by the speed with which the articles in question can be transported. It cannot exceed such a breadth as will enable the products raised at its extreme limit to reach the center in such a time as may be compatible with their fitness for use.
>
> "It is evident that any improvement in transport which will double its speed will double the radius of this circle; an improvement which will treble its speed will increase the same radius in a threefold proportion. Now, as the actual area or quantity of soil included within such a radius is augmented, not in the simple ratio of the radius itself, but in the proportion of its square, it follows that a double speed will give a fourfold area of supply, a triple speed a ninefold area of supply, and so on. How great the advantages, therefore, are, which in this case attend increased speed, are abundantly apparent."[1]

This early discussion points to one aspect of the advantages of greater speed in the movement of goods. There are, however, other and additional considerations. Thus, with respect to freight, more rapid movement reduces the volume of goods in transit, thus diminishing stocks and increasing the rate of turnover of articles in the course of production and sale. It also enables the producer to gauge his market more accurately by shortening the process of production from the growing or manufacture of the goods produced for sale to the final disposition of the produce, as well as by lessening the period between shipments of goods and their final sale.

With respect to passengers, greater speed brings greater comfort by shortening the period during which travelers are confined in the cramped quarters of a carriage or of a train. While many people travel for pleasure, most displacements are means to an end, not ends in themselves, so that the more quickly they are made the larger is the convenience to the public. Speed of passenger travel has its business aspects, in that modern systems of distribution are based on the assumption that the manufacturer will be able to keep in touch with his market over a wide area through visits by himself or his representatives. The commercial traveler is a product of the railway. Rapid transit tends to equalize the supply of labor in different places, lessening unemployment and standardizing wages. It has also its social aspects, for not only does increased speed of travel encourage freer movement of people, lessening differences and breaking down prejudices, but modern facilities for the carriage of passengers tend to diffuse population, to encourage the growth of suburban communities, and to do something in this way to offset the tendency to concentration which has been strengthened by the possibility of shipping goods at high speed and low cost.

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[1] Lardner, *Railway Economy*, London, 1850, pp. 13–14.

Effects of Reduction in the Cost of Transporting Passengers

In addition to the improvement in speed, we have already said that modern transportation has brought about a considerable decrease in the cost of transportation. This decrease has had the following effects:

Where the transportation of passengers is concerned, it has been the general experience that a decline in the fare charged has stimulated movements, both by encouraging habitual travelers to travel more and by bringing the cost of travel within the reach of more moderate incomes. This effect is most clear when pleasure travel is concerned, for the extent of commercial traveling is dependent upon complicated conditions relating to the sale of goods or of ultimate services which had best be omitted in the present discussion. We indicate the tendency of travel to expand as fares decrease by saying that the demand for passenger transportation is elastic. To this statement the important qualification should be made that a reduction in fares will have little effect upon the volume of travel when such travel involves the passenger in many incidental expenses not affected by the change in the passenger tariffs which is supposed to have taken place. Thus, on the whole, reduction on long hauls involving at least temporary changes of residence for the passenger, together with heavy accessory expenses, will have less effect in increasing traffic than will a corresponding decline in fares over short distances.

To the extent that passenger movement constitutes a social service desired for its own sake, a reduction in its cost which brings it within the reach of more people, or which makes it possible for those who have traveled a little to travel more, is an important direct advantage of new transportation methods.

To the extent that passenger travel constitutes an element in the process of production of goods, a reduction in the expense of such travel tends to lower the prices at which these goods can be sold.

Effects of Reductions in the Cost of Transporting Goods

Apart from the indirect effect produced by the lowering of passenger fares, modern means of transportation have tended to reduce the cost of goods to the consumer in two distinct ways. In the first place, a fall in the cost of movement enables consumers to enjoy the benefit of goods which are not to be had in their own immediate neighborhood, at a lessened expenditure of time and labor. There are articles which a particular district may never be able to produce, perhaps because of lack of raw material, perhaps because of lack of power, or even because of lack of skill. If such articles are bulky or heavy in proportion to their value, the cost of procuring them from other communities may under primitive conditions of transportation be prohibitive. Thus the products of agriculture were long consumed on the spot where they were produced, except where water carriage was available, because the cost of movement by land was exorbitantly high.

A second reason why a lowering of costs of transportation may frequently reduce price is that it will permit the division of labor. This is perhaps the most important result which has followed upon the improvement of our transportation machine. People not only move farther and more frequently to-day than they did one hundred years ago, but they send the goods which they produce greater distances, and they bring the goods which they consume from more distant points than they were accustomed to in the past, if we except from this statement certain commodities of high value which were imported by the way of water routes during the Middle Ages. One result of this has been a great shifting of centers of production, with a tendency for production to occur where there exist local advantages of raw materials, labor, and power, as well as where there is only the advantage of nearness to a market.[1]

We have developed in modern times an extreme specialization, both in industries and in occupations. On the whole, this specialization lowers costs of production because it allows individuals or cities or even states to concentrate upon the production of a few things, and to produce these things in large quantities, with great economy in labor and keen competition for distribution over wide areas. Indeed, German writers have pointed out that it is only by virtue of international specialization, particularly with respect to food products, that so-called "industrial states" have been able to devote themselves to manufacturing industry without concern for their own dwindling output of raw materials and of food.

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[1] Sax, *Die Verkehrsmittel in Volks- und Staatswirthschaft*, pp. 27–30. Sax insists that the influence of fuel and raw materials on the location of industry becomes less, year by year, because improvements in transportation count more heavily when it comes to the carriage of articles of this sort. Under modern conditions the actual location of production is often determined by very delicate adjustments of railroad rates.

Division of labor leads to a development of skill and to the building up of an equipment for production which would not be possible under a system of localized supply, involving usually a considerable increase, it may be said in passing, in the size of the average producing establishment. If the production which results from the division of labor is monopolized, the advantages of the newer method will go in the main to the producer; but if it is not monopolized, it will be the consumer who will gain by a lowering of the price for commodities for which he will have to pay.

Modern Methods Have Enlarged the Output of Goods Instead of Increasing the Leisure of Workers

It is to be observed that a reduction in the cost of carriage or an increase in the division of labor would be significant even though no increase in ultimate output should take place. In the absence of an increase in output, more effective means of production would result in an increase in leisure for the working population. People would be able to maintain their customary standard of living at the expense of fewer hours of daily work, and would have time free for rest, recreation, or for forms of activity usually classed as unproductive. Probably modern methods have occasioned some relief of this sort.

Yet the characteristic result of modern technique has not been an increase in leisure, but a rise in the standard of living and a greater consumption of goods. Producers have tended to maintain their former level of effort, and have found themselves, accordingly, in possession of larger quantities of goods, which they have sold in the market place to provide for themselves a more ample supply of those commodities which they have themselves desired to consume. Prices have declined, of course, in the face of such a policy, both in terms of goods obtainable for a day of human labor, and also in terms of money value; but since the decline in price has stimulated consumption, producers have still found their own net purchasing power increased, while the supply of commodities at the disposal of the general public has been notably enlarged.

Competition and Prices

Another way in which lowered costs of transportation may reduce prices, apart from the encouragement which it offers to the division of labor, is through the increased competition which arises as marketing areas become broader. We shall have excellent examples of this in later chapters of this book which deal with railroad rates and service. The wider the market the more generally does competition exist, and the less can any producer depend upon local fortuitous advantages either of production or distribution. Service must be met with service, and price with price. Of course, better transportation in individual cases may cause some increases in price as well as some decreases, but even here the more uniform standard of charges remains an advantage in itself.

Experience shows that prices of commodities are most likely to be reduced by changes in the rates charged for their transportation, first, when the commodity is of low value and the average haul is long, so that the rate constitutes a material portion of the selling price of the goods; second, when the commodity in question is produced under conditions of free competition; third, when the demand for the article is inelastic; and lastly, when the costs of production per unit other than transportation grow less as the supply increases. Extreme examples of commodities produced under these conditions are steel, textiles, and rough lumber.

On the other hand, if the supply of any commodity is limited, or even if the supply is of a character which can not be rapidly increased, the effect of reduction in the cost of transportation is more likely to be an increase in the net revenue secured by the producer, not a decrease in the price charged to the consumer. This is true, at least over short periods of time, for grain, coal, and monopolized articles of all descriptions. In France, between 1840 and 1872, the price of oysters is said to have multiplied ninefold, because the construction of railroads opened new markets for the seacoast towns, while the supply of these bivalves only slowly increased, and this phenomenon may serve as an example of the principle referred to.[1]

It is, however, true that noteworthy reductions in price may occur even when conditions appear at first sight to be likely to lead to increased producers' profit, as has happened in the production of coal in the United States, or in the case of agricultural supplies which are placed on the market under conditions of increasing cost, and yet have been powerfully affected with respect to price by changes in the art of transportation. In these instances the direct saving in costs of production through the decline in the railroad charge has been sufficient to lower the market price, in spite of contrary influences relating to the production of the article itself.

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[1] de Foville, *La transformation des moyens de transports et ses consequences économiques et sociales*, p. 228.

Equalization of the Supply of Goods

Still another advantage growing out of our modern transportation system relates to the stabilization of the supply of consumable commodities, particularly of products of the soil. The output of articles of this type depends not only upon acreage planted and available labor supply, but also upon conditions of temperature, rainfall, and insect pests, which are only slightly within human control. It is thus more variable than the supply of manufactured goods is likely to be, and it is not inconceivable that a persistent drought, as recently in southern Russia, may cause an entire crop failure over a considerable area. Since the products of agriculture form the basis of our food supply, the seriousness of such a condition is apparent.

Fortunately, it rarely happens that a failure of crops is world wide, and transportation was able to rid the world of a recurrent scourge, famine, when it enabled consumers in less favored localities to draw quickly and cheaply upon the temporarily more abundant resources of their neighbors. Moreover, even when famine has not threatened, transportation has equalized prices in different areas by the movements which it has brought about.

Data brought together by the United States Department of Agriculture in 1911 illustrate the wide range of sources of supply of the most ordinary articles of current consumption, and show, by inference, how slight the effect of failure of any one of these sources is likely to be.

> "For the season of 1910," to quote the report, "the quotations of Florida tomatoes appeared in the produce reports at Chicago, New York, and Kansas City, early in the winter and continued to about the middle of June, when Texas tomatoes began to appear. These were followed, in the Chicago market, by shipments from Mississippi, and about the first week of July by the produce of more northern fields. Among the states which contributed tomatoes to the Chicago trade in 1910, besides Florida, Mississippi, and Texas, were California, Tennessee, Missouri, and, of course, Illinois. New York's supply also came from a large number of states, among which were California, Florida, Texas, Mississippi, Tennessee, Virginia, North Carolina, South Carolina, New Jersey, Maryland, and Delaware, while some were imported from Cuba.

> "The supplies of peaches, strawberries, cantaloupes, string beans, and other products were also drawn from a wide range of territory. In 1910 there were at the same time quoted in New York City strawberries from Florida, Louisiana, Virginia, Maryland, and the Carolinas, and while some of these Southern berries were still in the market, supplies came in from New Jersey and New York. The cantaloupes used in New York, in the latter part of June and the first of July, 1910, were coming from Florida, Georgia, and the Carolinas, and also from Arizona and the Imperial Valley of California. A few weeks later melons from Maryland, Delaware, Virginia, and New Jersey met, on the same market, those from New Mexico, Nevada, and Colorado.
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> "In April and May of the same year the asparagus sold in New York City was grown, some near the Pacific coast and some in the regions along the Atlantic. Peaches from Texas and other Western states were included with those from Eastern states in the receipts at New York."[1]

It is evident enough that the range of sources of supply referred to in the report of the United States Department of Agriculture just quoted not only provided the cities of Chicago and of New York with seasonable commodities over a longer season than these cities could have counted upon had they been forced to rely upon near-by producers, but that it also equalized prices by limiting the effects on price of a chance falling off in the output of any single producing region. The quotation refers to conditions in 1910; but a similar statement might be made in 1928.

Better Transportation Reduces Economic Rent

The question is sometimes asked whether improvements in transportation tend to increase or to decrease what economists call "economic rent." By this term we mean the payments which owners of land can exact for the use of their land, apart from payments for the use of buildings which may be upon the site which is the subject of valuation. Economic rent is, therefore, analogous to ground rent, and as such is considered important as constituting one of the great shares into which the income of society is sometimes divided. Its magnitude is, of course, affected by all the characteristics of modern transportation—speed of passenger movement, speed of freight movement, and the costs of transporting both passengers and freight.

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[1] United States Department of Agriculture, *Yearbook*, 1911, "Reduction of waste in marketing," by Frank Andrews.

It is clear enough that the use of mechanical power in transportation tends to equalize the returns to areas which, before the introduction of railroads, yielded very different profits to their proprietors, and therefore commanded very different rents. This is because cheaper and quicker transportation reduces the disadvantage of distance under which remote sections formerly labored, while it lessens, at the same time, and for the same reason, the advantages of nearness to market which favorably situated localities formerly enjoyed.

Students of economic history of the United States are familiar with the increase in land values in the Mississippi Valley and the decline in value of portions of New England lands which arose out of the construction of the Erie Canal, and, later, out of the building of the trunk-line railroads. Similar phenomena have appeared at many points in our economic development; while the restraining influence of quick and inexpensive transportation from the hearts of our great cities to their suburbs upon the advance in price and in rental values of city property is a matter of repeated current observation, as is the increase in value of districts adjoining large cities, as these districts become accessible.

Better transportation, therefore, reduces the rental value of some lands, and increases the rental value of other lands. There is no available statistical information upon which we may base a statement as to whether aggregate land values have gone up or down as a result of the construction of railroads, but inasmuch as one element in the value of all land is location, and inasmuch as facilities for transportation eliminate the whole conception of location in proportion as they approach perfection, the belief is reasonable that, other things equal, improvements in transportation not only tend to bring the returns from different units of land to an equality, but that they also tend to reduce the share of the country's product which goes to the land-owning class as a whole.[1]

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[1] The absorption of capital in railroad construction may tend, under some conditions, to raise the general rate of interest and thus to depress the value of land. The same influence should reduce the proportion of the total national dividend received by the landowner. It is, however, to be remembered that while the railroad does represent more capital than the stage-coach and pack train, it probably does not embody a larger amount of capital per unit of transportation produced. The effect of railroad investments upon the general rate of interest raises somewhat complicated questions in economic theory that need not be discussed in the text, although they present an opportunity for interesting economic analysis.

Political and Social Effects

This is a treatise upon the economics of transportation, and the case for the railroad and for other forms of transportation by the use of mechanical power may perhaps be closed at this point. It is an adequate statement when we observe, as we have done in the foregoing pages, that modern means of transportation have increased the supply of goods, have lowered and equalized prices, have reduced the rent of land, and have rendered a direct service in the quick, inexpensive, and comfortable transportation of passengers which may yield as real a pleasure to those who take advantage of it as that derived from the contemplation of art or the consumption of much-prized material goods.

We should not be unmindful, however, even in a discussion of this sort, that quick, cheap, and reliable transportation has political and social effects as well as economic ones. No country the size of the United States, to take this example alone, could be held together were it not for the ease of movement within its boundaries. Transportation makes for homogeneity of type, for the sympathy which comes from knowledge, and for the ease of coöperative action in noneconomic as well as in economic matters which comes from uniformity in customs, a common point of view, and a likeness in environment. We talk the same language, we read the same books, we wear, in general, the same sort of clothes, we eat similar foods, and in spite of individual differences we achieve a unity of spirit which, while doubtless the result of many factors, is to an important degree a consequence of modern transportation. If we add to this the military power which results from transportation and which helps to render us secure, the importance of modern transportation machinery is made still more manifest.

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CHAPTER IX

THE LOCALIZATION OF SOURCES OF SUPPLY

Volume of Inland Traffic Movements

The magnitude of the transportation machinery provided for a nation like the United States seems calculated to accommodate a population and a volume of raw materials and finished goods in almost daily motion. Speaking of passengers alone, we have estimated the number of annual trips by railroad at 933 million, those by automobile at 4 billion, and those by street and interurban railway at 15 billion, or a total of approximately 20 billion, or approximately 200 trips per inhabitant per year. And while the weight of the annual goods production of the country is not known, a known annual movement of over 17 hundred million tons certainly indicates a high degree of mobility. It is desirable, therefore, to examine this flow of traffic, and to assemble, at least with respect to freight, some of the facts which are known about it.

Difficulties of Exact Description

There is much difficulty in analyzing inland transportation movements in any country, for the reason that neither passengers nor goods are stopped and counted in the course of transit within a nation as they would be if they crossed national boundaries and became subject to customs regulations.

There is difficulty also in segregating the local or gathering and distributing movements of commodities from the currents of traffic which flow, often for long distances, between sources of supply and consuming markets. These difficulties make an exact statement of the flow of inland traffic impossible, but they will not prevent a reasonable approximation which will indicate in a general way the nature of the transportation which takes place.

Recapitulation of the Volume of Freight Traffic of the United States

We have already estimated the annual freight movements in the United States as follows:

	Tons	Tons
Waterways		
Great Lakes	125,517,551	
Mississippi River	27,089,762	
Other	25,831,388	178,438,701
Pipe lines		117,157,060
Trucks		276,400,000
Railroads		1,187,295,744
Total		1,759,291,505

Commodities Handled

The commodities carried by the various means of transportation mentioned in the table may be listed as follows:

1. Great Lakes. The chief commodities handled on the Great Lakes are iron ore and coal, with lesser amounts of grain, stone and sand, and lumber.

2. Mississippi River. Fuel oil, logs, grain, iron and steel, sugar, and aluminum move in quantities upon the Mississippi. Much sand, gravel, and rock is also carried, but for short distances.

3. Other waterways include (a) the Warrior River in Alabama; (b) the Columbia, Willamette, Sacramento, and San Joaquin Rivers on the Pacific coast; (c) the Hudson River; (d) the New York State Barge Canal; and (e) a number of canals and rivers of minor importance, mostly emptying into or lying in the vicinity of the Atlantic Ocean or the Gulf of Mexico.

The most important of these miscellaneous waterways are the New York Barge Canal and the Hudson River. Both handle much the same range of commodities, including grain, petroleum and petroleum products, lumber, coal, stone, copper, brick, sand and gravel, salt, and sulphur. The traffic on other rivers and canals varies, but fuel oil, grain, logs and lumber, coal, sand and gravel constitute the bulk of the tonnage.

4. Pipe lines. This facility transports crude petroleum. Petroleum products move by rail.

5. Motor trucks. The statistics of motor-truck traffic are extremely incomplete, but the business includes building materials, perishable goods, such as milk, eggs, vegetables, and fruit, and the miscellaneous freight supplied by retail and wholesale distributing establishments. This traffic has been described in Chapter VI. Other commodities of importance are gasoline, live stock, and household goods.

6. Railroads. Common observation suggests that the variety of

products carried by the railroad system of the United States is so great as to defy summarization. This is not, however, the fact, as statistics published by the Interstate Commerce Commission show that the bulk of railroad tonnage consists of comparatively few articles. Thus the commodities carried by Class I railroads in the United States[1] during the year ended December 31, 1924 were as follows:

REVENUE FREIGHT CARRIED BY CLASS I RAILROADS OF THE UNITED STATES DURING THE YEAR ENDED DECEMBER 31, 1924

Article	Tonnage
Coal, bituminous and anthracite	414,498,780
Clay, gravel, etc.	136,649,619
Lumber, logs, ties, pulpwood, etc.	108,094,065
Iron and iron ore	95,193,107
Grain, including wheat, corn, and oats	56,439,988
Petroleum and products	49,709,241
Cement	22,969,596
Brick and artificial stone	18,164,637
Cattle, hogs, sheep, and goats	17,236,667
Chemicals and explosives	8,423,296
Cotton and cotton-seed products, except oil	7,857,144
Fertilizers	7,814,825
Fruits, including citrus	6,764,402
Sugar, syrup, glucose, and molasses	5,407,401
All other carload traffic	191,523,953
Total carload traffic	1,146,746,721
Less than carload traffic	40,549,023
Grand total all traffic	1,187,295,744

Nearly three-fourths of the entire tonnage of the railroads of the United States in 1924 consisted of coal, gravel, logs and lumber, iron, grain, and petroleum. If we add cement, brick, live stock, heavy chemicals and fertilizers, fruits, cotton, and sugar, the proportion becomes nearly nine-tenths. The miscellaneous parcel freight, which represents the greatest variety in shipments, amounts to less than 4 per cent of the whole.

7. Air routes. Air-craft tonnage consists of mail and some little high-grade express matter. The volume of the traffic is slight.

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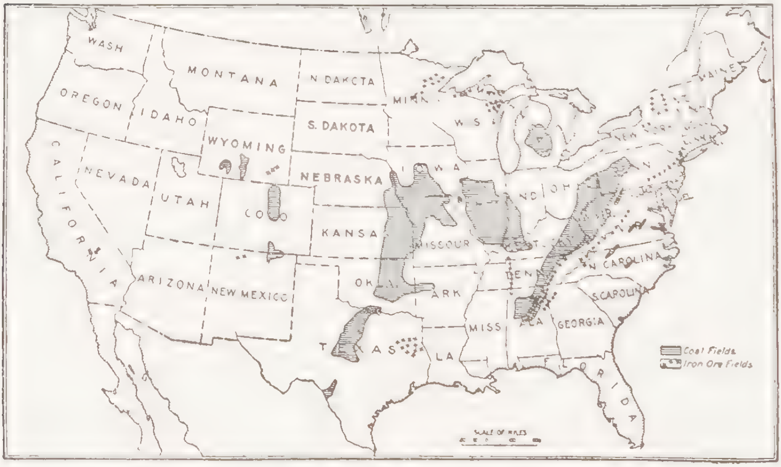
[1] The Interstate Commerce Commission divides the railroads which report to it into classes according to volume of earnings. Class I includes all railroads with gross earnings of $1,000,000 a year or more.

Sources of Production of Commodities Transported in the United States

The remainder of this chapter will be devoted to a brief description of the areas of production in this country of coal, lumber, oil, iron, grain, live stock, fertilizer, fruit, cotton and sugar, articles the transportation of which gives rise to the great commodity movements of the United States. Stone, sand, gravel, cement and brick will be omitted because the hauls of these commodities are usually short and their importance secondary, while aluminum, sulphur, and heavy chemicals will also be passed by. The purpose of the description will be to provide a starting-point from which to trace the more significant traffic movements.

Coal

Coal is widely distributed in the United States, but the greater part of the output comes from a few sources. Substantially all coal classed as anthracite is mined in eastern Pennsylvania. In 1922, the anthracite output was reported as 54,683,022 net tons. This was unusually low, however, on account of the coal strike of this year, and the figure of 90,473,451 for 1921 is more nearly representative.[2]



Iron Districts and Coal Fields of the United States[1]

Bituminous coal is much more abundant in this country than the harder and dryer anthracite. There are five principal sources for bituminous coal:

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[1] Eckel, *Iron Ores: Their Occurrence, Valuation, and Control.* 1914.

[2] United States Geological Survey, *Mineral Resources of the United States,* 1922.

1. The Appalachian region, extending through northern Ohio, Maryland, Virginia, West Virginia, eastern Kentucky, Tennessee, and Georgia.

2. The Eastern region, including the fields of Illinois, Indiana, and western Kentucky.

3. The Western region, including the coal fields of Iowa, Missouri, Nebraska, Kansas, Arkansas and Oklahoma.

4. The Southwestern region, in Texas.

5. The Rocky Mountain region, including, among other deposits, those of Colorado and Wyoming.

Of these five sources, however, the Appalachian and the Eastern regions were responsible for 356,915,746 out of a total of 422,268,099 tons mined in 1922, or 85 per cent. The leading states were Pennsylvania, with 113,148,308 tons, West Virginia, with 80,488,192 tons, Illinois, with 58,467,736 tons, Kentucky, with 42,134,175 tons, and Ohio, with 26,953,791 tons.

Iron Ore

Iron deposits in the United States are scattered, but production is even more concentrated than in the case of coal. In 1922, the total iron-ore output was reported as 47,128,527 long tons. Of this, 39,716,016 tons were mined in the Lake Superior district, and 4,711,400 tons came from Alabama along the southeastern edge of the Appalachian Mountains. The Lake Superior ore bodies are called "ranges," and bear the names of Mesabi, Gogebic, Menominee, Marquette, Vermilion, and Cuyuna.

In 1922, the iron ore mined around Lake Superior was reported as follows:

IRON ORE MINED IN THE LAKE SUPERIOR DISTRICT, 1922[1]

Range	Gross tons
Mesabi	26,704,601
Gogebic	4,910,789
Menominee	3,290,641
Marquette	2,745,626
Vermilion	1,108,764
Cuyuna	955,595
Total	39,716,016

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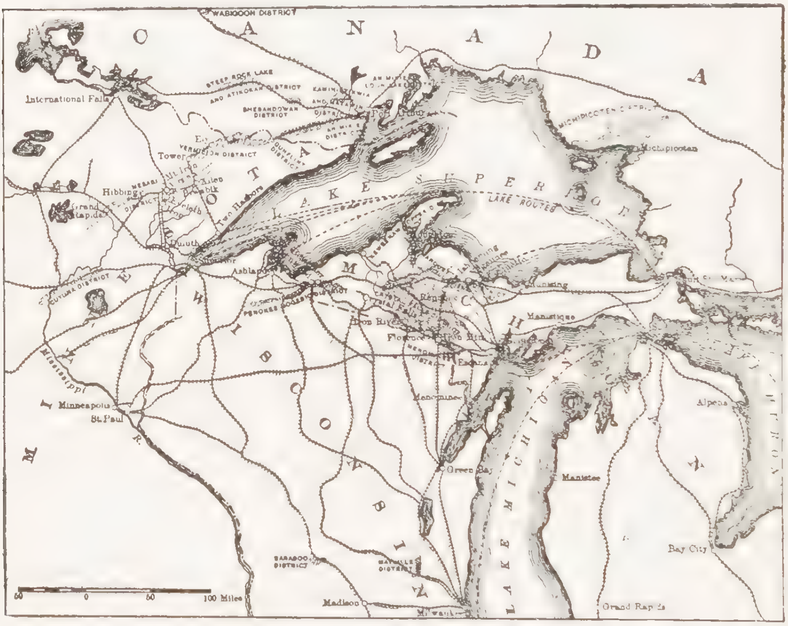
[1] United States Geological Survey, *Mineral Resources of the United States*, 1922, p. 351.

The advantages of Lake Superior, and especially of Mesabi, ore are: (1) cheapness of mining ore on the Mesabi range, where the ore bodies are flat and relatively shallow, and open-cut mining can be carried on economically in many cases; (2) high quality, which means a high percentage of iron content and low percentage of phosphorus and sulphur; and (3) convenient access to water transportation. These advantages, taken in connection with the great size of the ore bodies, will probably maintain the Lake Superior district in its position of leadership for many years to come.



Sketch Map of Lake Superior Region, Showing Iron Districts, Shipping Ports, and Transportation Lines[1]

Iron shipments other than iron ore include pig iron, steel ingots and castings, rolled iron and steel products such as rails, plates, rods, bars, and structural shapes, and miscellaneous products. In the miscellaneous group, nails, pipe, tin and terne plates, and galvanized sheets are the largest items.[2]

Production of iron and steel can best be carried on where there is ready access to ore and coal. For this reason, 80 per cent of the blast furnaces of the country and 66 per cent of the active steel works in 1923 were located in the range of states bordering upon the Great Lakes. These states in order of importance are Pennsylvania, Ohio, New York, Illinois, Indiana, Michigan, Wisconsin and Minnesota. Other centers of production are Virginia, West Virginia, Alabama, New England, and the Pacific coast. In most cases these last-named states smelt and manufacture local ores, or, as on the Pacific coast, rely largely on scrap iron for raw material.

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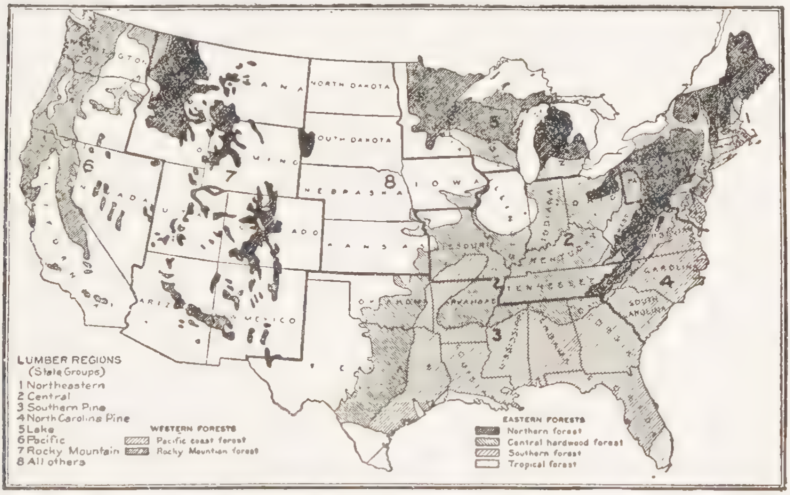
[1] Van Hise and Leith, "The Geology of the Lake Superior region," Monographs of the United States Geological Survey, Washington, 1911, vol. lii, p. 32.

[2] American Iron and Steel Institute, Annual Statistical Report, 1923, pp. 1–2.

Lumber

The United States grows both hard and soft lumber, with the latter predominating. The most important wood is yellow pine, including Western yellow pine, with an estimated cut of 13,381,000 M board feet in 1920, and the next is Douglas fir, with an estimated cut of 6,960,000 M board feet. Other important commercial woods are white pine, hemlock, and oak.



LUMBER PRODUCING REGIONS AND FOREST AREAS[1]

Production of Lumber by Species and District

The United States Department of Agriculture collects extensive, although not entirely complete, returns showing annual cut by species and location.

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[1] United States Department of Agriculture, Bulletin No. 1119, p. 12, "Lumber Cut of the United States, 1870-1920."

LUMBER CUT REPORTED TO THE UNITED STATES FOREST SERVICE, 1920[1]
(in M feet)

Species	Total cut 1920 all states	Texas, La., Ark., Miss., Ala., Ga., Fla., S. C., N. C., Va.	Wn., Ore., Calif., Nev., Ida., Mont.
Yellow pine	8,964,313	8,667,773	....
Western yellow pine	2,270,898	....	1,958,734
Douglas fir	6,956,683	....	6,945,473
Total	18,191,894	8,667,773	8,904,207
Total reported cut—all species	29,878,360		

Study of the foregoing map and table will make it clear that the cut of Douglas fir and yellow pine in the United States is highly localized. Almost all the Douglas fir is shipped from district 6, principally from Washington and Oregon; almost all the yellow pine comes from districts 3 and 4 in the south or from district 6 in the west. The Western yellow pine which is not cut upon the Pacific coast is found in greatest quantity in states such as Idaho, Montana, Arizona and New Mexico.

Besides the yellow pine and Douglas fir, white pine is cut in district 5 by the Great Lakes, in Idaho, and in New England, New York, and Pennsylvania. The reported cut in 1920 was 1,377,327 M board feet. At one time the white pine of the Lake region was one of the principal resources of lumber users of the United States, but rapid and persistent lumbering has greatly lessened its importance.

The reported cut of hemlock in 1920 was 1,685,320 M board feet, largely from Washington, Wisconsin, Michigan, and Pennsylvania, and the reported cut of oak was 1,853,580 M board feet. Oak is the most important of the hard woods. It is widely distributed in districts 1, 2, 3, and 4, but is scantily represented in the Western states. From the transportation point of view, however, neither oak, hemlock, nor white pine possesses the importance of the yellow pine or of the Douglas fir.

Grain

The most important grains from the point of view of production are corn, oats, wheat, and barley, in the order named. In 1925, the United States produced 2,900,581,000 bushels of corn, 1,501,909,000 bushels of oats, 669,365,000 bushels of wheat, and 218,002,000 bushels of barley. Corn and oats, however, are consumed for the most part upon the farm, and are proportionately less the subject of transportation than wheat, at least in their original form.

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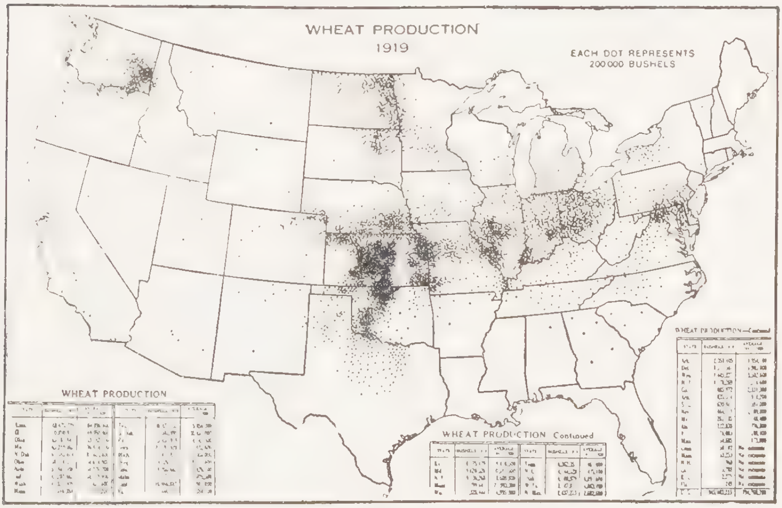
[1] United States Department of Agriculture, *sup. cit.*

Wheat

Wheat, like other crops, requires a certain combination of soil and moisture for the best results. It is essentially a product of temperate climate and moderate rainfall, and finds congenial conditions in the central and northern Mississippi Valley of the United States on this account.



Wheat Production, 1919[1]

Probably, however, wheat could be grown upon a much wider area than that upon which it is actually found. Wheat competes with corn, with hay, and with tilled crops on a profit as well as on a climatic basis. Most of the wheat farms in this country lie between the corn belt and the ranching regions of the West, not so much because wheat could not be grown farther east and south, but because other crops yield larger financial returns in districts to which they are suited.

There are six commercial classes of wheat under the official wheat standards of the United States, with numerous subvarieties. Hard

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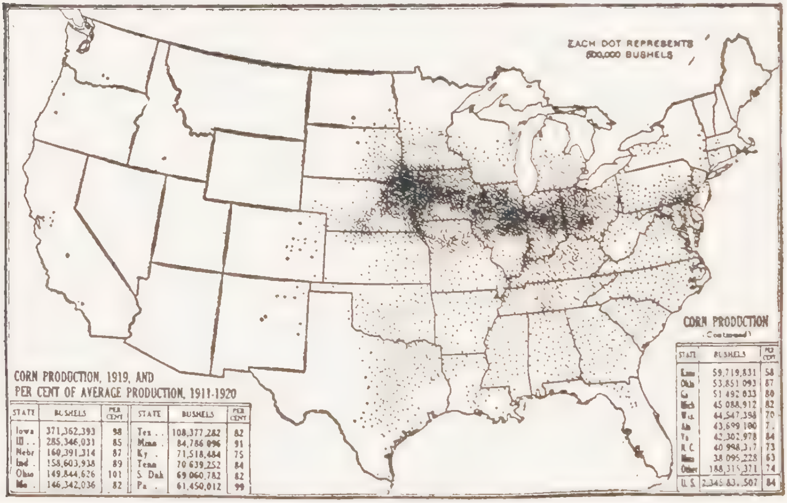
[1] United States Department of Agriculture, *Yearbook*, 1921.

PRODUCTION OF WHEAT, UNITED STATES, 1921–1924[1]

Year	Bushels	Tons of 2,000 lbs.
1921	814,905,000	24,447,150
1922	867,598,000	26,027,940
1923	797,394,000	23,921,820
1924	862,627,000	25,878,810
1925	669,365,000	20,080,095

red spring-sown wheat and Durum wheat is grown mostly in the extreme northern section of the Mississippi Valley, in North Dakota, in South Dakota, and in Minnesota. Hard red winter wheat is produced in the central section of the Great Plains area; soft red winter wheat largely in the humid sections of the eastern United States. The leading states for this last-named species are Missouri, Indiana, Ohio, and Illinois. Little wheat is grown south of the Ohio River or west of the hundredth meridian.



CORN PRODUCTION, 1919, AND
PER CENT OF AVERAGE PRODUCTION, 1911-1920

STATE	BUSHELS	PER CENT	STATE	BUSHELS	PER CENT
Iowa	371,362,393	98	Tex. .	108,377,282	82
Ill. .	285,346,031	85	Minn. .	84,786,096	91
Nebr	160,391,314	87	Ky. .	71,518,484	75
Ind. .	158,603,938	89	Tenn	70,639,252	84
Ohio	149,844,626	101	S. Dak	69,060,782	82
Mo. .	146,342,036	82	Pa. .	61,450,012	99

CORN PRODUCTION
(Continued)

STATE	BUSHELS	PER CENT
Kans	59,719,831	58
Okla	53,851,093	87
Ga	51,492,033	80
Mich	45,088,912	82
Wis	44,547,398	70
Ala	43,699,100	7.
Va	42,302,978	84
N. C.	40,998,317	73
Miss	38,095,228	63
Other	188,315,371	74
U. S.	2,345,83[illegible],507	84

Corn Production, 1919

Corn and Oats

Eighty per cent of the corn crop is fed to animals on the farm, and not over one-fifth of the crop is shipped out of the county where it is grown. The volume of production is so great that even this proportion would exceed 16,000,000 tons, but the average haul is short even in commercial movements. In the case of oats, the census indicates that in 1919 slightly less than one-third of the national production was sold by the farmers. The remainder was apparently used for farm consumption. One-third of the production of 1925 would amount to 500,636,000 bushels, or 8,010,000 tons.[1]

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[1] Bushels converted into tons at 60 pounds to the bushel. Figures for 1925 are preliminary and subject to correction.

Like corn, oats are grown for the most part in the northern Mississippi Valley, in the states of Iowa, Illinois, North Dakota, Indiana, Ohio, eastern Nebraska, eastern South Dakota, and southern Minnesota, Wisconsin, and Michigan. Oats thrive farther north than does corn, but, on the other hand, the production of oats is negligible south of the Ohio River or in corresponding latitudes to the southwest.

Petroleum

The most productive sources for petroleum supply are the Mid-Continent and California fields. The statistics for these and other producing areas in 1925 were as follows:

PRODUCTION OF CRUDE PETROLEUM IN THE UNITED STATES, CALENDAR YEAR 1925 [2]

Field	Production Thousands of barrels	Tons, at 310 lbs. to the barrel
Mid-Continent	420,966	65,250
California	230,148	35,673
Rocky Mountain	35,386	5,485
Gulf Coast	31,458	4,876
Appalachian	27,270	4,227
Illinois and southwest Indiana	8,503	1,318
Lima-Indiana	2,121	328
	755,852	117,157

The Mid-Continent field extends from Kansas City south across eastern Kansas and Oklahoma, with extensions into Texas and northwestern Louisiana. The California field, as its name implies, is located in the southern part of California, including the areas around Bakersfield and Ventura. Both of these fields are recent as compared with the other centers of oil production, as the wells in

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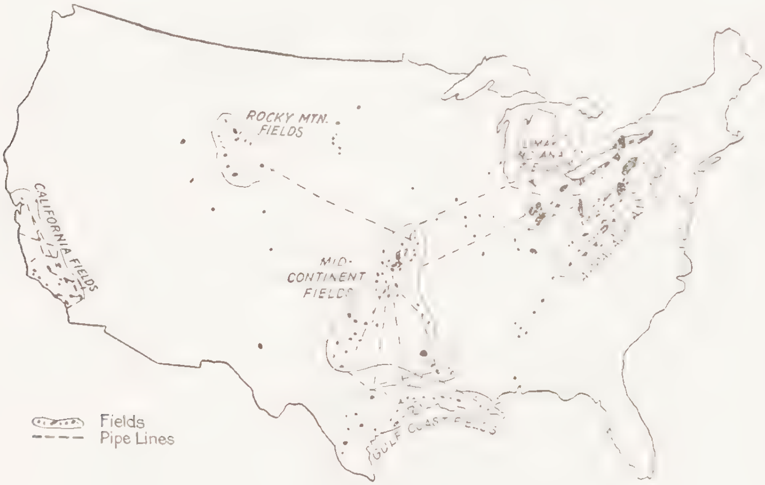
[1] Standard weight per bushel: corn, 56 lbs.; oats, 32 lbs.

[2] United States Department of Commerce, Bureau of Mines, "Petroleum Statistics, 1925."

California were brought into action only in 1898, and those in the Mid-Continent in 1903, while the Appalachian field was discovered in 1855, and the Lima-Indiana in 1886. The boundaries of the other fields need no special definition.[1]

Inasmuch as the California and Gulf Coast oil fields ship principally by coastwise steamer, and the Illinois and Indiana production is so small that it may be neglected, the student of transportation should concern himself chiefly with the wells in the Mid-Continent, Rocky Mountain, and Appalachian areas, of which the Mid-Continent output is 87 per cent.



Oil and Gas Map of the United States

Cattle, Hogs, Sheep, and Goats

The items which deserve attention here are cattle, hogs, and sheep, as the number of goats in the United States is relatively small. Sheep are found in large numbers in most states except in the old South, but by far the greater part of the sheep in the country are to be found west of the Mississippi River, and the leading states are Texas, California, Idaho, Ohio, Montana, Oregon, Wyoming, Colorado, Utah, and New Mexico, predominantly range states of the Far West.

Hogs are a product of the corn belt. Few hogs are produced west of the hundredth meridian, but Iowa, Illinois, Missouri, Indiana, Nebraska, and Ohio are abundantly supplied. The reason for this is that farmers find it more economical to feed corn to hogs and then to sell the hogs than to attempt to market the corn itself. There is therefore a direct relation between corn and hogs which accounts for the latter's distribution. In spite, however, of some concentration in the corn belt, swine are widely distributed over the states of the East, South, and Middle West.

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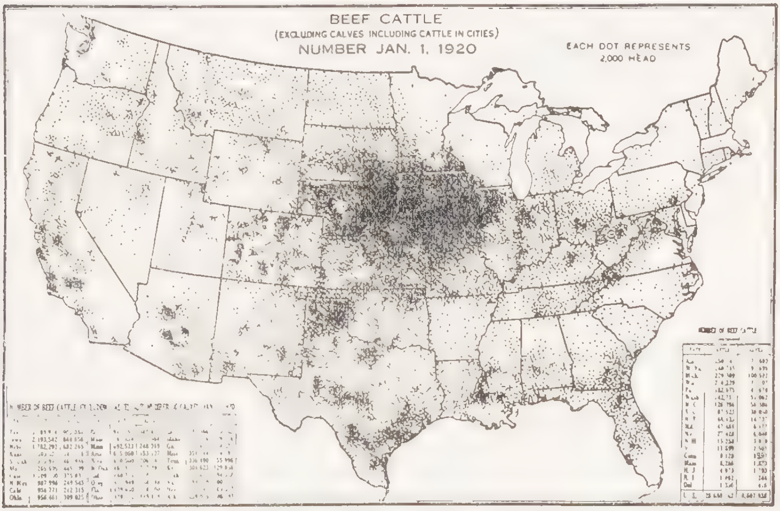
[1] Pogue, *The Economics of Petroleum*, New York, 1921.

The distribution of beef cattle is indicated upon the following map.


BEEF CATTLE
(EXCLUDING CALVES INCLUDING CATTLE IN CITIES)
NUMBER JAN. 1, 1920
EACH DOT REPRESENTS 2,000 HEAD

Beef Cattle Number, January 1, 1920[1]

The foregoing map shows that in the case of cattle, as indeed also in the case of hogs and sheep, we have a product that shows no concentration comparable with that characteristic of coal, iron, or lumber, or even with the concentration of wheat, cotton, and sugar. While beef cattle are reared in large quantities upon Western ranges, they are also up to a certain point profitable by-products of general farming operations, and so may be found almost anywhere where general farming is carried on.

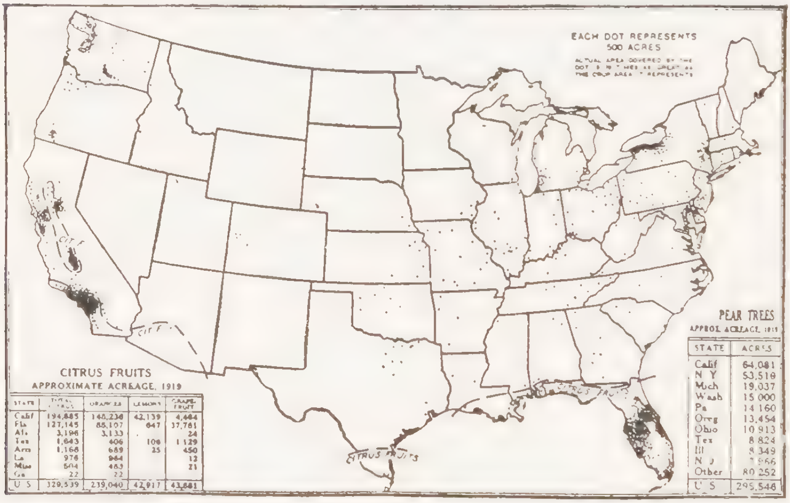
It must, however, be remembered that cattle shipments from any section depend upon the surplus of production over consumption, not upon production alone; in 1916, for instance, to take an extreme case, 87.5 per cent of the cattle marketed in the State of Delaware were sold to local butchers for the retail market trade. Generally

[1] United States Department of Agriculture, *Yearbook*, 1921.

speaking, the disposable surplus is low in the East and South, where population is dense and local consumption great, and high in the Western and especially in the Southwestern range states, where contrary conditions occur. It is also notably high in the corn belt states because cattle are shipped to this section for fattening. Indiana, Illinois, Iowa, Missouri, Nebraska, and Kansas act as a species of live-stock reservoir through which much live stock passes which was not originally raised and cannot be consumed in the district.[1]

Fruits

The most important commercial fruits produced in the United States are apples, oranges, grapes, peaches, pears, grapefruit, strawberries, and lemons. In addition to these, the United States imports bananas, olives, dates, figs, lemons, pineapples, and berries, as well as, in lesser amounts, a variety of other fruits.



CITRUS FRUITS
APPROXIMATE ACREAGE, 1919

STATE	TOTAL CITRUS	ORANGES	LEMONS	GRAPE-FRUIT
Calif	194,885	148,236	42,139	4,484
Fla	127,145	85,107	647	37,761
Ala	3,196	3,133		24
Tex	1,843	406	106	1,129
Ariz	1,168	689	25	450
La	976	964		12
Miss	504	483		21
Ga	22	22		
U S	329,539	239,040	42,917	43,681

PEAR TREES
APPROX. ACREAGE, 1919

STATE	ACRES
Calif	64,081
N Y	53,518
Mich	19,037
Wash	15 000
Pa	14 160
Oreg	13,454
Ohio	10 913
Tex	8 824
Ill	8 349
N J	7 966
Other	80 252
U S	295,548

CITRUS FRUIT AND PEAR TREES, APPROXIMATE ACREAGE, 1919[2]

Import traffic is, of course, highly concentrated. The leading port of entry in the case of almost every kind of fruit is New York. Besides New York, one must mention New Orleans for lemons and bananas, Florida ports for pineapples, Philadelphia for dates, San Francisco and Chicago for currants, and Boston, Chicago, and San

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[1] United States Department of Agriculture, Report No. 113, "Meat Situation in the United States," by L. D. Hall, F. M. Simpson, and S. W. Doty, 1916.

[2] United States Department of Agriculture, *Yearbook*, 1921.

Francisco for figs. As in the case of sugar, points where fruit is imported perform the same function as points in the United States where fruit is produced and assembled, so far as the domestic market is concerned.

So far as home production goes, the orchards of the country are either upon the Pacific coast or in the states south of the Ohio River and east of the Mississippi. This is not true of apples, which seem to thrive in all states except those in the extreme South and Southwest, but it is true of most other fruits, and sometimes to a surprising degree.

Substantially all the lemons grown in the United States come from California, substantially all the grapefruit from Florida, and 97 per cent of the oranges from these two states combined. The following table lists carload shipments of grapes, peaches, pears, and strawberries in 1924, according to class of fruit and principal shipping states.

CARLOAD SHIPMENTS OF FRUIT, 1924[1]

State	Grapes	Peaches	Pears	Strawberries
California	75,021	12,748	6,312	.....
Georgia	......	13,522	......	.....
New York	3,413	3,038	2,978	.....
Washington	......	......	2,456	....
Oregon	......	......	1,483	.....
Arkansas	......	2,293	......	1,004
Texas	......	1,071	......	.....
New Jersey	......	1,047	......	.....
Louisiana	......	......	......	1,076
Maryland	......	......	......	1,088
Virginia	......	......	......	1,249
Missouri	......	......	......	1,497
North Carolina	......	......	......	1,634
Tennessee	......	......	......	1,637
Total	78,434	33,719	13,229	9,185
All states	80,421	40,584	16,246	12,255

Cotton

The outer boundaries of cotton production are determined almost entirely by climatic factors. According to the United States Department of Agriculture, the average summer temperature of 77 degrees which obtains along the northern border of the cotton belt is the limit beyond which commercial production of cotton becomes impossible.

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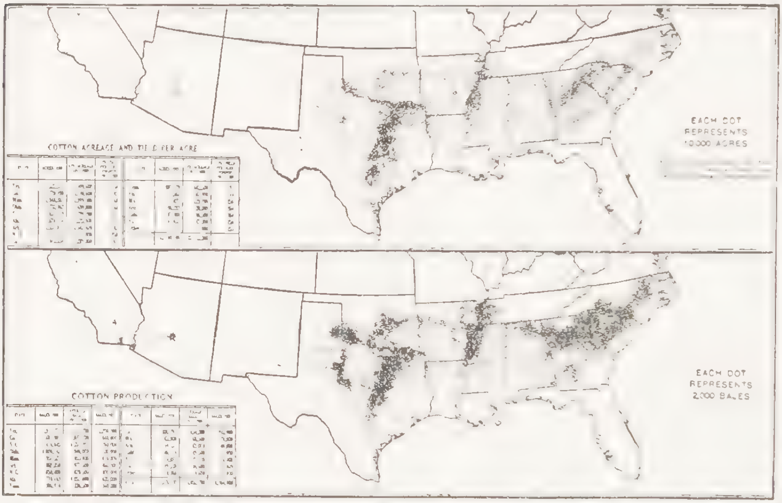
[1] United States Department of Agriculture, *Yearbook*, 1925. In this table no shipments are noted unless they amount to at least 1,000 carloads annually. Figures are preliminary and subject to detail correction.

Within the cotton belt the production of cotton depends largely upon soil. Cotton is grown, it is true, upon nearly all well-drained soils, but the yield on certain types, such as the black prairies of Alabama, Mississippi, and Texas, or the river bottoms of Mississippi, Tennessee, and Arkansas, is much higher than in other districts.


COTTON ACREAGE AND YIELD PER ACRE
EACH DOT REPRESENTS 10,000 ACRES
COTTON PRODUCTION
EACH DOT REPRESENTS 2,000 BALES

Cotton Acreage and Production, 1919[1]

The production of cotton during the past several years has been as follows:

COTTON PRODUCTION, UNITED STATES, 1921–1925[2]

Year	Production in bales of 500 lbs.	Production in tons
1921	7,954,000	1,988,500
1922	9,762,000	2,440,500
1923	10,140,000	2,535,000
1924	13,628,000	3,407,000
1925	16,106,000	4,026,500

More than in the case of most farmers, the cotton grower specializes upon a single crop. In some areas in Texas, South Carolina, and Mississippi, as much as 70 per cent of all the land in crops is in cotton, while proportions as high as 50 per cent are common. The reason is the world-wide demand for cotton, the relatively steady employment of labor which it affords throughout the year, and the fact that, unlike corn, the crop is sold direct and not fed to livestock.

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[1] United States Department of Agriculture, *Yearbook*, 1921.

[2] United States Department of Agriculture, *Yearbook*, 1925. The figure for 1925 is subject to correction.

The cotton plant yields not only lint or fiber, but also seed. This seed, being bulky, is not shipped long distances, but is crushed in oil mills scattered through the producing regions. The four primary products are linters, hulls, cake, and oil. Cotton-seed cake is the compressed residue of the cotton-seed kernel after the oil has been extracted, and when ground becomes cotton-seed meal. No less than 2,125,000 tons of cake and meal were produced in the United States in 1925, besides 1,331,000 tons of hulls. The oil itself amounted to 187,155,000 gallons. Lint is the short fuzz remaining about the seed after the cotton has been ginned. In 1924 the production of linters was approximately 214,000 tons.

Sugar

Sugar differs from most of the other articles considered in this chapter in that the domestic market is largely supplied by importations from other countries. In the fiscal year 1923, the imports of sugar into the United States amounted to 4,446,616 short tons, of which 3,923,094 tons came from Cuba. In addition, 492,774 tons were imported from the Philippines, 755,159 were brought in from Hawaii, and 600,412 tons from Porto Rico. These quantities are to be compared with a domestic production of 1,093,000 tons.[1]

Most of the imported sugar reaches the United States at the Atlantic ports of New York, Philadelphia, Baltimore, or Savannah, the Gulf ports of New Orleans or Galveston, and the Pacific coast port of San Francisco. This sugar is imported in a raw state and refined at the seaboard before being forwarded to districts of ultimate consumption. From the point of view of inland transportation, therefore, the seaboard cities mentioned are to be considered producing centers for the major portion of the sugar consumed in the United States.

When we consider domestic production in addition to imports, distinction must be made between cane sugar and beet sugar. The ultimate product of the sugar beet and the sugar cane is substantially identical, but the conditions under which cane and beets may be successfully grown differ, and the locations of the industries are correspondingly different. Sugar cane requires a uniformly high temperature, ample sunshine, and a large and constant supply of moisture. The areas which supply these conditions in the fullest degree in this country are southern Louisiana, southeastern Texas, and southern Florida, and most cane grown for sugar is grown in Louisiana alone.

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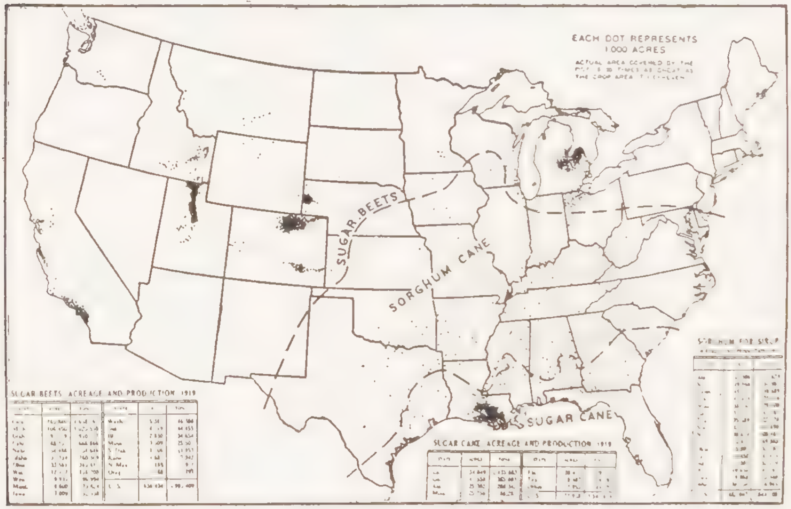
[1] United States Department of Agriculture, *Yearbook*, 1925; United States Department of Commerce, Monthly Summary of Foreign Commerce, 1925.

Sugar beets require moderate rather than extremely warm temperatures, with cooler weather during the ripening period. They are grown under irrigation in semi-arid regions such as Utah and Colorado, as well as in states with more abundant rainfall such as Michigan and northwestern Ohio. Sugar beets thrive, that is to say, over a rather wide range of territory in the temperate zone, the exact location depending upon soil, topography, water supply, and drainage, as well as on the presence or absence of certain pests, and the importance of this crop in the general scheme of rotation which may characterize the operation of a farm. The greater adaptability of the sugar beet makes it easily the most important domestic source of sugar in the United States. In 1925 the production of beet sugar in the United States was 895,000 tons. The production of cane sugar was 198,000 tons, all from Louisiana.



Sugar Crops, Acreage, 1919[1]

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[1] United States Department of Agriculture, *Yearbook*, 1921, p. 457.

Fertilizer

There are many kinds of artificial fertilizer, but the most important fertilizer materials are sodium nitrate, phosphate, and potash. Practically all sodium nitrate originates in Chile, entering the United States at a variety of ports, mostly upon our Gulf and Atlantic seaboards. Potash is largely of German and French origin and is also, therefore, imported. Most of the phosphate rock comes from Florida, although there are extensive deposits in Tennessee.[1]

The bulk of the fertilizer product is used in the agricultural states east of the Mississippi River, and the consumption is heaviest in the southeastern states. Most mixing plants are therefore located along the Atlantic coast, or at least in the Atlantic seaboard states, convenient both to the market and to the principal sources of supply. The average haul of fertilizers and fertilizer materials is short.

Specialization in American Industry and Agriculture

This concludes our survey of the commodities that move in great volume upon the transportation routes of the United States. The essential traffic fact which study of the location of industries in this country reveals is that the production of many of the articles most transported is concentrated in restricted regions and that even when production is widespread there is concentration in output destined to a market. Sometimes this specialization is due to the chance occurrence of natural deposits, as in the case of iron ore or fertilizers, sometimes to climate, as with cotton and sugar, sometimes to a combination of soil, climate, and favoring topography, as in the case of grain. Whatever the cause, specialization leads to transportation and to the development of routes and services which should be further considered.

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[1] United States Department of Agriculture, Bulletin No. 798, "A survey of the fertilizer industry," by E. A. Goldenweiser, 1919. See also Report of the Federal Trade Commission on the Fertilizer Industry, 1923.

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CHAPTER X

ROUTES CONNECTING PRODUCING AND CONSUMING TERRITORIES—THE GREAT LAKES

Routes Connecting Producing Territories

The more or less familiar facts reviewed in the preceding chapter enable us to make a beginning in tracing the flow of commodities from one point to another in the United States. This flow consists of a series of movements from specialized producing centers to markets where commodities are consumed, along paths or channels which can be described and in a measure defined.

Pipe-line Routes

The simplest routes in use in the United States are probably those for the transportation of crude petroleum by pipe line. They are simple because trunk pipe lines are relatively few, only one commodity is handled, and shipments occur only in one direction. Since the importance of pipe-line transportation has already been recognized, it is not necessary to add at this point to the comments in Chapter I.

Great Lakes Route

The significance of the Great Lakes deserves, however, further elaboration.

The Great Lakes route runs for most purposes from the head of Lake Superior at Fort William or Duluth to Buffalo on Lake Erie. Lake Michigan ports lie upon a branch of this route. Little traffic passes beyond Buffalo to Lake Ontario, and the St. Lawrence River cannot yet be classed as a major highway from the seacoast to the interior, although its importance is probably destined to increase.

In order to understand the nature of the Great Lake traffic the reader's attention is again directed to the maps showing the distribution of coal, iron, and wheat, presented in the preceding chapter. The greatest iron deposits of the country lie at the head of Lake Superior. The greatest iron-using and the greatest coal-producing parts of the United States lie south and east of Lake Erie. The three lakes of Erie, Huron, and Superior provide an east-and-west connection which makes movements of coal and iron cheap between these points of origin and destination. Not only this, but since the grain fields in Canada and in the northern Mississippi Valley are the most important upon the American continent, the lakes supply a convenient road for grain to American and Canadian markets, while they also bring this product to the seaboard and facilitate its export. The principal return shipments over the Great Lakes route consist of the anthracite and bituminous coal of Pennsylvania.

Canals at St. Mary's Falls

Representative statistics concerning Great Lakes freight movements are collected at St. Mary's Falls, at the entrance to Lake Superior upon the east. At this point are two lock canals, one American and one Canadian. These canals accommodate boats of eighteen and twenty feet draught with a maximum capacity of perhaps fifteen thousand tons (1923)[1] and they are operated free of tolls. All water-borne traffic passing between Lakes Superior and Huron must pass through one or the other of the two canals, and since the greater part of the Lakes traffic has origin or destination in Lake Superior, the canal statistics provide an unusually satisfactory picture of the business of the Lakes as a whole.

The table on following page presents the figures for the American and Canadian canals combined.

In addition to freight tonnage, 53,770 passengers passed through the canals in 1924. The traffic through the American canal was 98 per cent of the total freight, 91 per cent of the total registered tonnage, and 36 per cent of the total number of passengers carried.

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[1] The last detailed figures showing the size of vessels passing through the St. Mary's Falls canals were published by army engineers in 1923 and are as follows:

	Number of passages of vessels of class	Aggregate freight carried by vessels of class	Percentage of total freight carried by class
Tons net register between—		(Tons)	
1 and 1,000	3,620	507,938	1
1,000 and 2,000	2,177	3,941,224	4
2,000 and 3,000	2,660	9,363,012	10
3,000 and 4,000	4,669	22,020,788	24
4,000 and 5,000	3,401	22,539,676	25
5,000 and 6,000	3,217	21,851,692	24
6,000 and over	1,326	11,068,079	12
Unregistered	905	87,249	..
Total	21,975	91,379,658	100

United States, Annual Report of the Chief of Engineers, Commercial Statistics, 1923, p. 1150.

ST. MARY'S FALLS CANAL, MICHIGAN

FREIGHT TRAFFIC, 1924[1]

	Amount in short tons by commodities		Amount in short tons by classes
Classes and commodities	Bulk	Package	
Eastbound			
Vegetable food products:			13,636,576
Wheat	8,691,678		
Barley	832,057		
Corn	228,713		
Oats	897,665		
Rye	1,369,614		
Flour		1,099,610	
Flaxseed	517,239		
Wood and paper: lumber	524,840		524,840
Nonmetallic minerals: stone, gravel, and sand	28,440		28,440
Ores, metals, and manufactures of			42,540,139
Iron ore	42,452,549		
Pig iron	29,282		
Copper	58,308		
Unclassified: general merchandise		110,760	110,760
Total eastbound	55,630,385	1,210,370	56,840,755
Westbound			
Nonmetallic minerals:			14,564,010
Coal, hard	1,439,701		
Coal, soft	12,126,252		
Oil	172,782		
Stone	762,779		
Salt	62,496		
Ores, metals, and manufactures of			120,029
Iron ore	39,648		
Manufactured iron and steel		80,381	
Unclassified: general merchandise		512,596	512,596
Total westbound	14,603,658	592,977	15,196,635
Total east and west bound	70,234,043	1,803,347	72,037,390

American Grain Shipments

The most important lake shipping points for American grain in 1923 were Duluth-Superior on Lake Superior, and Milwaukee, Chicago, and Calumet on Lake Michigan.

Grain, and particularly wheat, moves from the Dakotas, Montana, and Minnesota to Duluth-Superior, and from Illinois, Iowa, and

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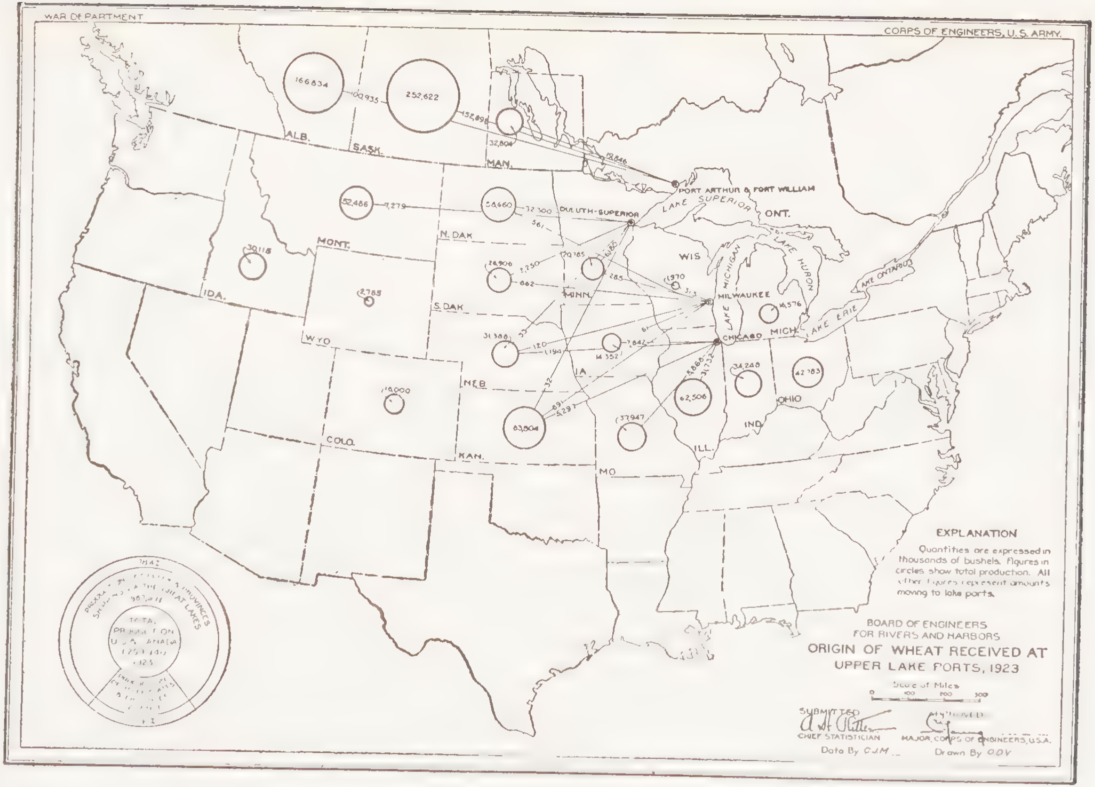
[1] United States, Annual Report of the Chief of Engineers, Commercial Statistics, 1924.



52730°—20. (Face p. 86) No. 2

ORIGIN OF WHEAT RECEIVED AT UPPER LAKE PORTS [1]

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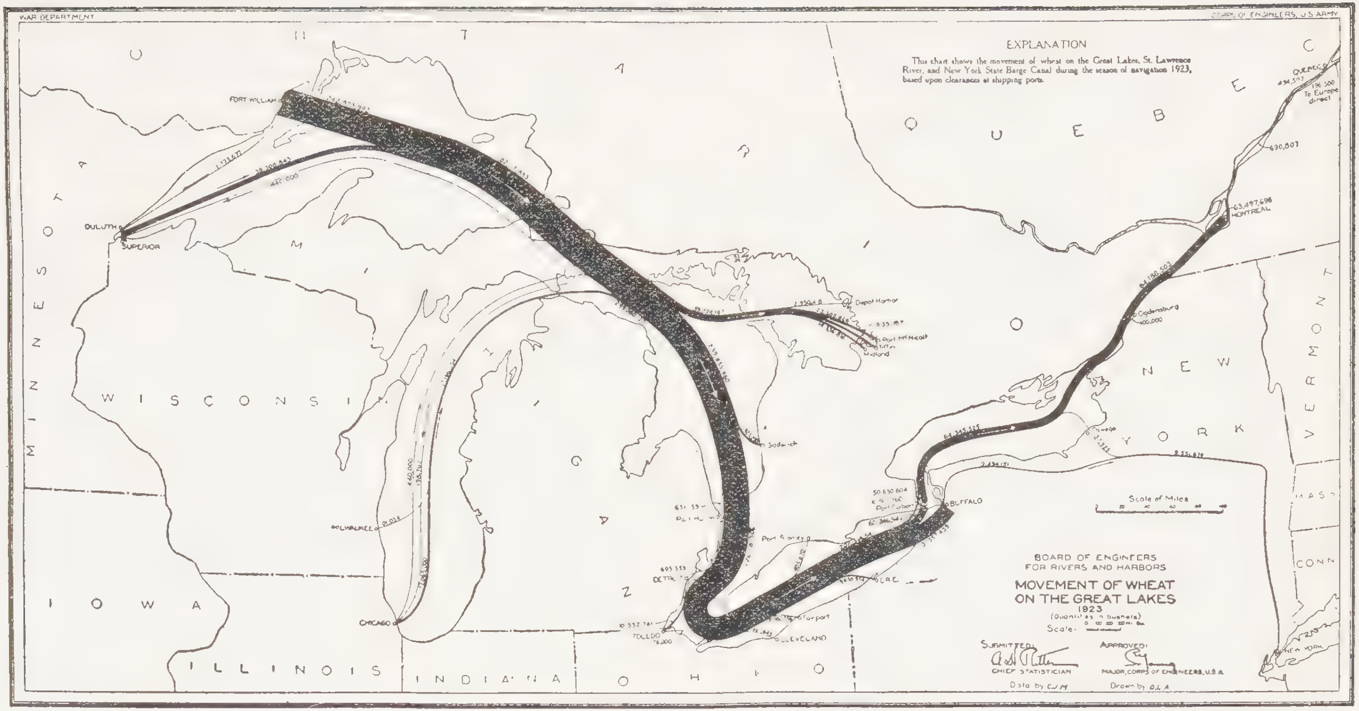
[1] United States, War Department, Corps of Engineers, United States Army and United States Shipping Board, *Transportation on the Great Lakes*, 1926.



Movement of Wheat on the Great Lakes[1]

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[1] United States, War Department, etc., *Transportation on the Great Lakes, sup. cit.*

portions of Missouri, Kansas, South Dakota, Minnesota, and Wisconsin, it moves to Chicago and Milwaukee. From these points, grain moving to North Atlantic ports of the United States goes chiefly to Buffalo for transshipment, although some is transshipped at Erie, Fairport, and other Lake Erie ports of the United States, and in addition a considerable amount goes to Georgian Bay ports. Of the latter, some eventually reaches the North Atlantic ports of the United States, while some goes by rail lines to Montreal, Quebec, St. John, and Halifax, and the remainder is distributed to interior points in both the United States and Canada. Most of the grain moving all-water to Montreal must pass through a transfer elevator at the foot of Lake Erie, although a small part goes through to Montreal in small vessels directly from the head of the Lakes. The principal point of transfer from the large Lake vessels to the small type capable of navigating the New Welland and St. Lawrence canals is Port Colborne. During recent years, however, the grain seeking this route has been greater than the Port Colborne elevator could handle, and considerable grain has been transferred from the large to the small carriers at Buffalo.[1]

The movement of American grain out from the Mississippi Valley by rail to Atlantic and Gulf seaboard cities will be considered in Chapter XII. In discussing the Great Lakes traffic it should be made clear, however, that the greatest grain tonnage is from Canadian, not from American, points of origin. Indeed, the tonnage of wheat, the grain moving in largest volume, was in 1923 only 1,973,000 tons from Milwaukee, Chicago, Calumet, and Duluth combined, as against 8,876,000 tons from the Canadian lake ports of Fort William and Fort Arthur. This is explained by the competition of the Gulf routes for the American production in Kansas, Nebraska, Oklahoma and Texas, and by the indirect character of the water routes from points in Illinois and Indiana.

Movement of Canadian Crop

The major portion of the Canadian crop moves east by way of the Great Lakes. Canadian wheat originates for the most part in the prairie provinces of Saskatchewan, Alberta, and Manitoba, all west of Lake Superior.[2]

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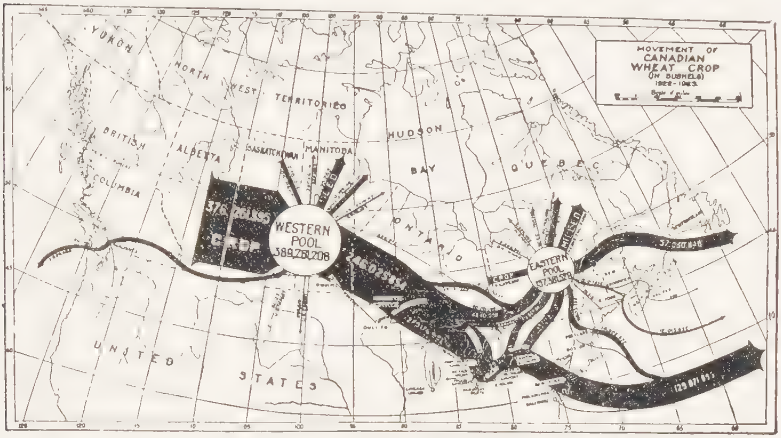
[1] United States, War Department, etc., *Transportation on the Great Lakes, sup. cit.*, p. 88.

[2] During the year 1923, 55.9 per cent of the wheat received at Fort William and Port Arthur originated in Saskatchewan, 36.9 per cent in Alberta, and 7.2 per cent in Manitoba.

The following map traces the movements of this grain as well as the disposition of grain produced in eastern Canada:



Movement of Canadian Wheat Crop, 1922-1923[1]

The words "Western pool" indicates the wheat crop to be disposed of during the crop year from September 1, 1922 to August 31, 1923, consisting of 376 bushels produced during the crop year 1922 plus a carry over of 13 million bushels.

Not all of this grain was commercially disposed of. Of the 259.2 million bushels marketed, by far the larger portion, namely 246 millions, was either shipped to eastern Canadian markets (130.4 million bushels), or was directly exported to Great Britain (117 million bushels). Out of this, 20.4 million bushels moved by rail; the balance, 229.2 million bushels,[2] reached Lake Superior at Fort William or at Port Arthur, and proceeded through Lakes Superior and Huron to eastern points.

Canadian Grain in the Eastern Provinces

The map indicates in a general way, finally, the progress of Canadian grain in the Eastern provinces. One hundred and twenty million bushels went to American ports, of which the most important was Buffalo. One hundred and nine million bushels were received by Canadian ports, which means in general that the grain abandoned the Lake route somewhere upon the eastern shore of Lake Huron or

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[1] *Canada Year Book*, 1924, p. 546.

[2] The statistics of rail movement include shipments to the Ogilvie Flour Mills Co. at Fort William, for grinding. This grain is apparently included both as rail and (subsequently) as water freight; a process that accounts for a slight discrepancy between the total eastward movement and the sum of the rail and water hauls.

Georgian Bay and continued its journey by rail. Whichever route, adopted, most of this Canadian wheat was either ultimately exported through American or Canadian harbors on the Atlantic seaboard or on the St. Lawrence River, or it was absorbed by local consumption in the eastern provinces.

It is of some interest to observe that the total exports of wheat from Canada during the crop year of 1923 were 229.7 million bushels, out of perhaps 320 million bushels marketed in one way or another. The difference between this figure and the total of Canadian wheat exported is, of course, the result of the exportation of American grain through Canadian harbors.[1]

Normally one would expect that Canadian grain would move through Canadian, and American grain through American, ports. As a matter of fact, 65 per cent of Canadian wheat exports move through New York, Baltimore, Boston, and Portland, while a substantial proportion of the American wheat exports which make use of the Great Lakes leaves the United States by way of Montreal. The explanation is found in geographical and climatic conditions. Western grain can reach Montreal more cheaply than it can New York, while Canadian facilities for handling grain are superior. At New York the grain must be loaded into lighters, towed to the vessel's side, and then elevated into the vessel by a floating elevator. At Montreal the grain can be discharged into transfer houses and spouted from there directly into the holds of vessels.

These advantages attract heavy American shipments from lake terminals to Montreal. Canadian grain, however, matures several weeks later than the American; indeed, navigation on the St. Lawrence ceases while the Canadian crop is still moving. For approximately two weeks after closing of the St. Lawrence—usually during the last week in October—Canadian grain continues to flow to Buffalo and Georgian Bay or lower Lake ports. The grain shipped to Georgian Bay ports and to Port Colborne then and earlier, and some of that sent to Montreal, is used for the supply of flour mills and grist mills in eastern Canada and for seed grain for the farmers of Ontario and Quebec, but the grain which reaches Buffalo and other United States Lake ports sooner or later proceeds to the Atlantic seaboard by rail. During the time of year when this part of the crop is moving the advantages of Canadian ports are minimized and New York is the export point most relied upon.[2]

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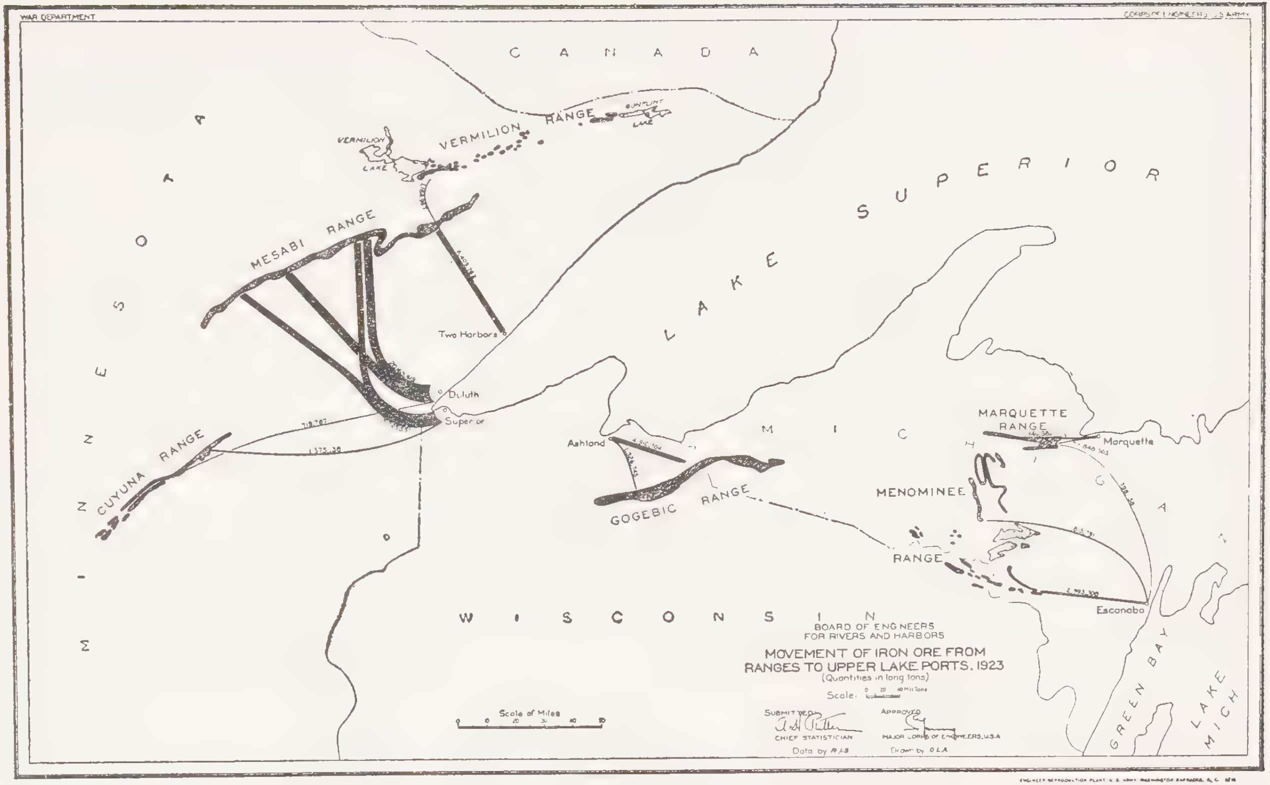
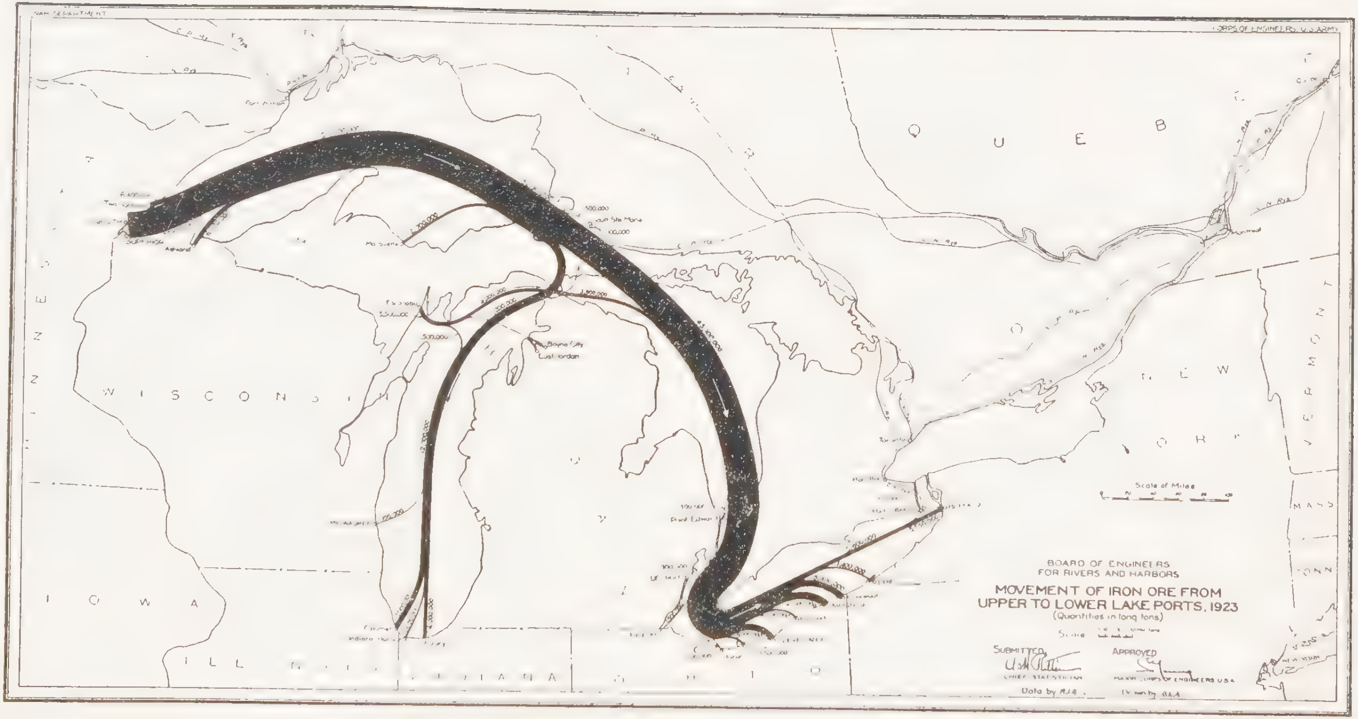
[1] *Canada Year Book*, 1924, pp. 545–548.

[2] Canada, Report of the Royal Grain Inquiry Commission, 1925.



Movement of Iron Ore from Ranges to Upper Lake Ports[1]

[1] United States War Department, etc., *Transportation on the Great Lakes*, *sup. cit.*



Movement of Iron Ore from Upper to Lower Lake Ports[1]

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[1] United States War Department, etc., *Transportation on the Great Lakes, sup. cit.*

Iron-ore Shipments

The ore shipments by way of the Great Lakes reach water after a rail haul which varies from 12 to 120 miles. The Marquette field in Michigan, which finds its outlet at Marquette on Lake Superior, is the nearest to deep water, and the Mesabi range is the most distant. All the ranges empty upon Lake Superior except the Menominee, for which Escanaba on Lake Michigan is most convenient. Including Escanaba, the shipments of iron ore from American ports on Lakes Superior and Michigan in 1923 were as follows:

IRON ORE SHIPMENTS FROM THE PRINCIPAL AMERICAN LAKE PORTS, 1924 [1]

Port	Shipments in tons	Average distance
Duluth-Superior	29,029,505	864
Agate Bay	5,395,593	843
Ashland	5,271,638	826
Marquette Bay	1,451,564	663
Marquette Harbor	1,110,792	660
Escanaba	4,638,602	492
Total	46,897,694	

Direction of Iron-ore Movements

Passing out upon the Lakes the iron-ore cargoes proceed east, in specially designed freighters, through Lake Huron and the St. Clair and Detroit Rivers to American harbors on the south shore of Lake Erie, or in smaller volume they turn south through Lake Michigan to Calumet and Indiana Harbor at the extreme end of the Lake.

Ore Receipts at Principal Lake Ports

In 1924, the most important ore-receiving harbors and the incoming tonnage at each were those listed upon the following page:

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[1] United States, Annual Report of the Chief of Engineers, Commercial Statistics, 1924.

IRON ORE RECEIPTS AT IMPORTANT LAKE HARBORS, 1924

Harbor	Tonnage	Average distance hauled (miles)
Lake Erie		
Conneaut	8,300,671	879
Cleveland	7,414,981	758
Ashtabula	7,336,624	838
Buffalo	4,045,128	884
Lorain	3,430,828	799
Fairport	2,100,118	841
Toledo	1,216,524	694
Huron	825,923	727
Erie	640,367	779
Lake Michigan		
Calumet	5,127,746	732
Indiana Harbor	1,774,817	761
Total	42,213,727	

Final Destination of Lake Ore Shipments

Ore arriving at Indiana Harbor and Calumet, as well as some of that reaching lake ports such as Lorain, Cleveland, Ashtabula, and Conneaut, is smelted locally, but much of the tonnage reaching ports on Lake Erie continues by rail to more distant furnaces at Pittsburgh, Youngstown, and elsewhere. The map on page 197 indicates the market area for lake ores.

During 1923, the largest flow of iron ore between any two points was that between Conneaut and Pittsburgh. The rail shipments from Ashtabula were greater than those from any other port, but they were more widely distributed than those from Conneaut. In 1925, 205 blast furnaces, or 79 per cent of all the furnaces in the United States, were located in Michigan, Wisconsin, Illinois, Indiana, New York, Pennsylvania, and Ohio,[1] and these relied, in most cases, upon the Great Lakes for their supply of ore.

Coal

Westbound coal furnishes the chief return cargo for the ore barges operating to the lower lakes. Coal reaches Lake Ontario at Buffalo, Ashtabula, Fairport, Lorain, Sandusky, Toledo, and other ports on the American side, and proceeds through the Detroit River and Lake Huron, with some deliveries at local points, to destinations on Lake Superior, and, to a lesser extent, to harbors on Lake Michigan. In

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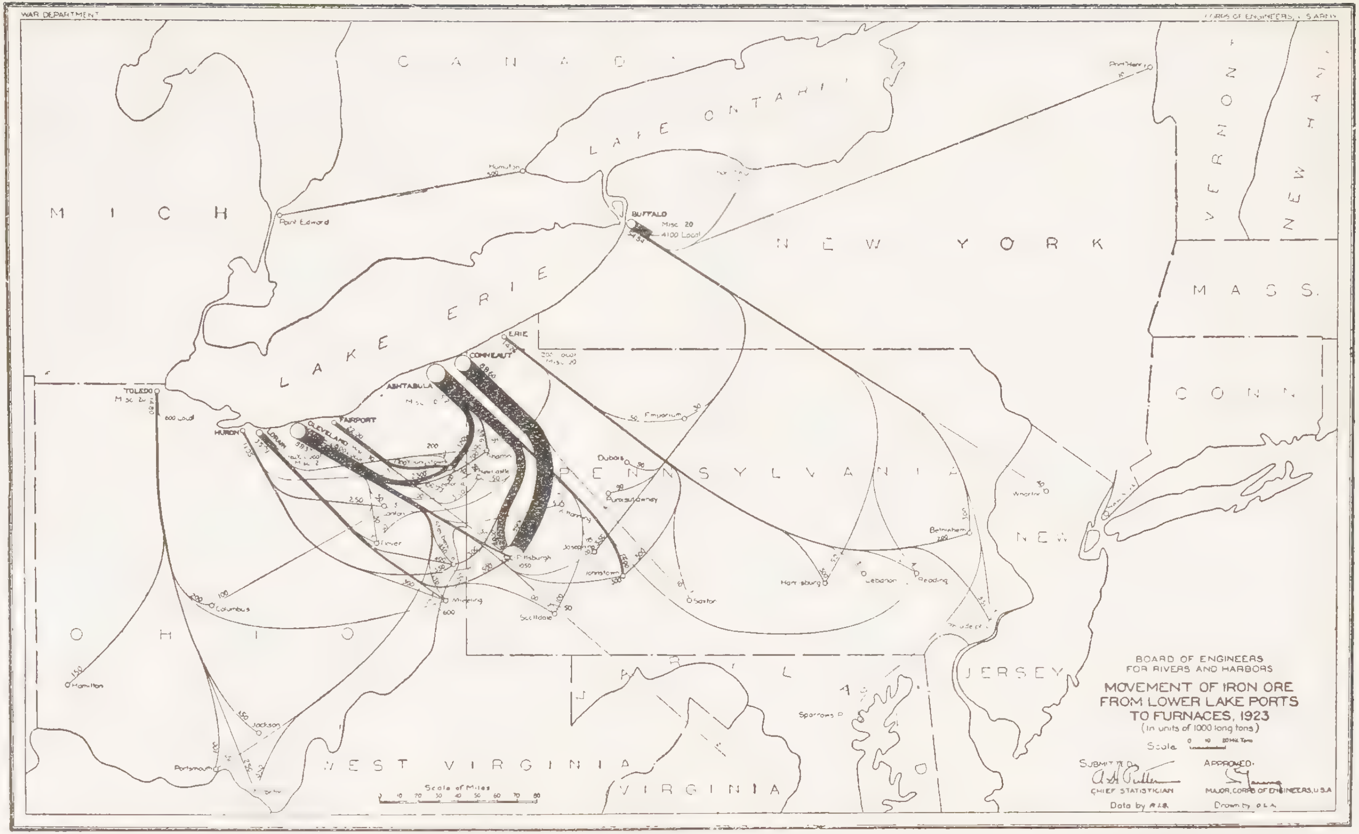
[1] American Iron and Steel Institute, "Annual Statistical Report," 1926.

A Typical Bulk Freight Steamer Unloading Coal at Duluth Harbor



Movement of Iron Ore from Lower Lake Ports to Furnaces[1]

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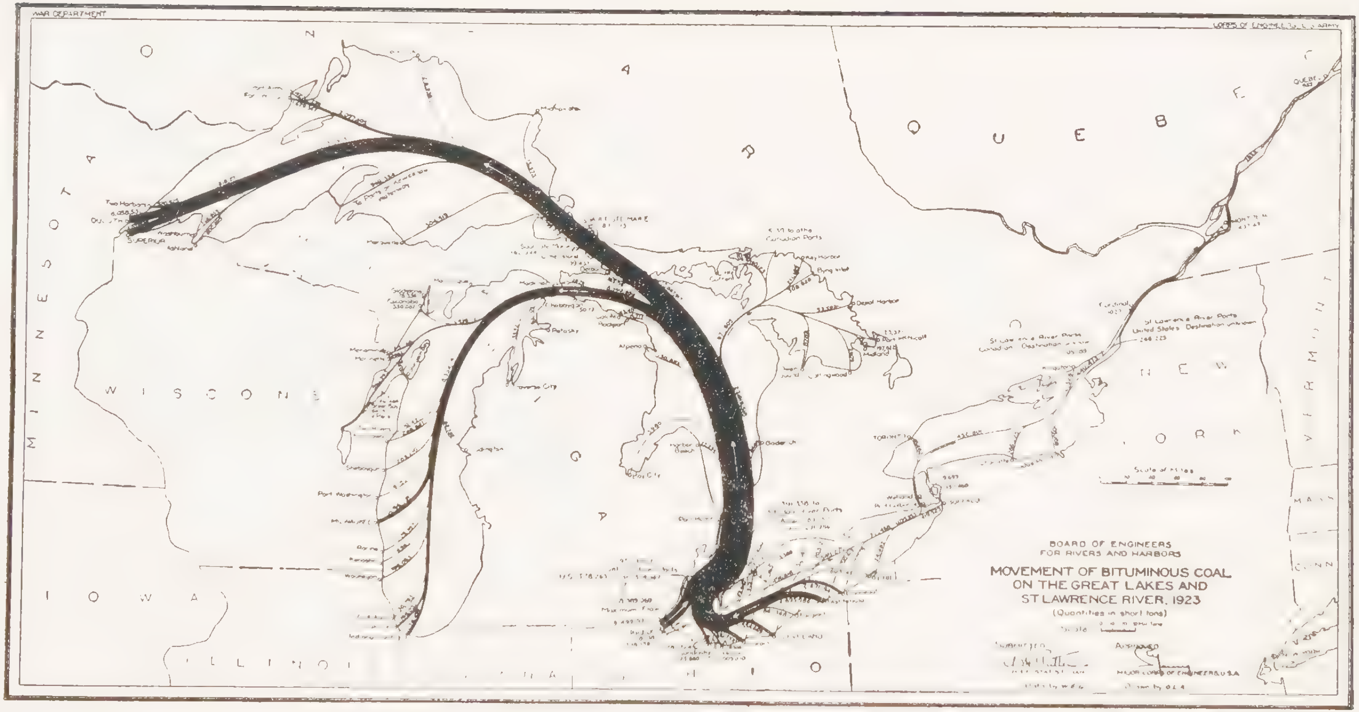
[1] United States War Department, etc., *Transportation on the Great Lakes, sup. cit.*


WAR DEPARTMENT
CORPS OF ENGINEERS, U.S. ARMY
BOARD OF ENGINEERS FOR RIVERS AND HARBORS
MOVEMENT OF BITUMINOUS COAL ON THE GREAT LAKES AND ST LAWRENCE RIVER, 1923
(Quantities in short tons)
Scale of Miles
MINNESOTA
WISCONSIN
IOWA
ILLINOIS
MICHIGAN
OHIO
ONTARIO
QUEBEC
NEW YORK
VERMONT
MASS
CONN
Two Harbors
Duluth
Superior
Ashland
Sault Ste Marie
Milwaukee
Port Washington
Sheboygan
Racine
Kenosha
Petoskey
Traverse City
Alpena
Goderich
Midland
Depot Harbor
Toronto
Quebec
St Lawrence River Ports United States Destination unknown
St Lawrence River Ports Canadian Destination unknown

Movement of Bituminous Coal on the Great Lakes[1]

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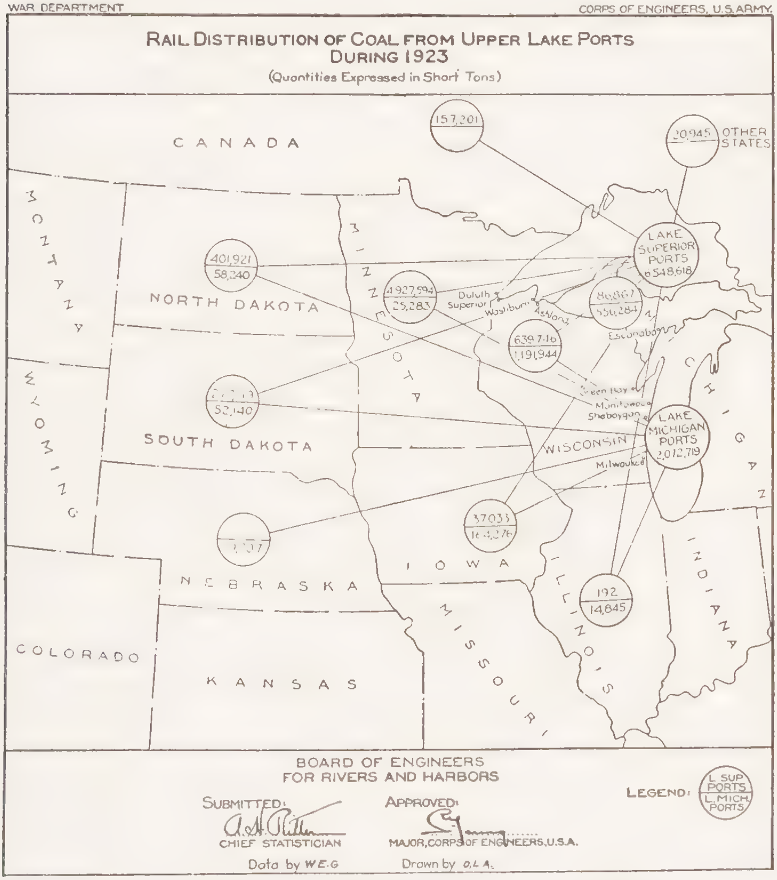
[1] United States War Department, etc., *Transportation on the Great Lakes, sup. cit.*

1924, out of 21,084,795 short tons shipped from Lake Erie ports, 9,020,872 tons were taken by Duluth-Superior alone, and 5,992,897 tons by the harbors of Chicago, Calumet, Indiana Harbor, and Milwaukee. This coal is for the most part Pennsylvania bituminous, although a good deal of anthracite is also shipped into Lake Michigan territory.



RAIL DISTRIBUTION OF COAL FROM UPPER LAKE PORTS[1]

The Northwestern market for Lake coal includes Wisconsin, Minnesota, Iowa, Michigan, the Dakotas, Montana, and some points even farther west, as well as a large strip of Canadian territory along the adjacent border. This territory requires coal for railroads, homes, iron and copper mines, and growing manufacturing industries. After severe storms, which often delay and sometimes entirely interrupt rail traffic for days at a time, the docks are called upon to meet a sudden and extraordinary demand for coal from all quarters. If the coal supply for the Northwest were to come by rail from the points of production as required, very great difficulty would be experienced in supplying, from current production, the concentrated demands that occur here during the periods when rail transportation, due to climatic conditions, is at its worst.

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[1] United States, War Department, etc., *Transportation on the Great Lakes*, *sup. cit.*

A railway storage depot, such as the docks afford, has the flexibility necessary to meet emergencies. As the business has increased, the docks have been called upon more and more to stock coal for consumers. This is particularly true in normal times in the case of railroad companies, whose coal occupies a considerable portion of the dock storage space. They stock their coal early, but take it from the docks only as they require it.[1]

New York Barge Canal and St. Lawrence River

The New York Barge Canal and the Hudson River serve to some extent as an eastern extension of the Great Lakes route, and the St. Lawrence-Gulf Deep Waterway referred to in Chapter II will be, when completed, a still more effective portion of this highway. The experts for the International Joint Commission of 1921 expected that grain, some flour, iron ore for Atlantic seaboard furnaces, some lumber, sulphur, and automobiles, together, of course, with other products in smaller quantities, would move eastward from Lake to river when the St. Lawrence River and the Welland Canal were dredged to a depth of twenty-five or thirty feet. Sugar, manganese, fruit, vegetable oils, rubber, and clay were mentioned as possible westbound quantity movements. This is, however, only a prospect, as the actual movement by the St. Lawrence is small and consists mainly of grain. The Barge Canal also is a carrier of grain, together with petroleum, sand, stone, gravel, and lumber. For most purposes, as has been said, the Great Lakes water route terminates at the eastern end of Lake Erie, where it connects with the trunk-line railroads across Pennsylvania and New York.

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[1] United States War Department, etc., *Transportation on the Great Lakes, sup. cit.,* p. 3[illegible].

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CHAPTER XI

MAJOR RAILROAD ROUTES IN THE UNITED STATES

Major Railroad Routes in the United States

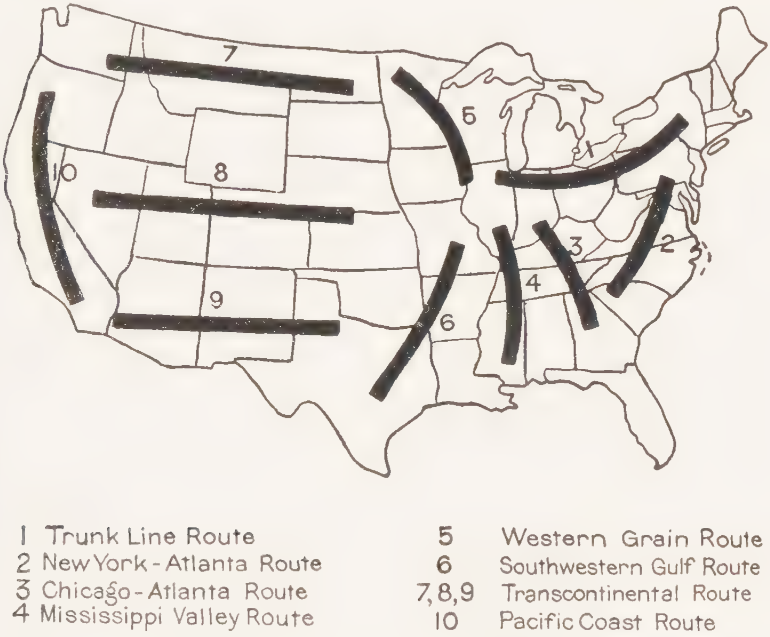
We may now proceed to a rapid characterization of the major railroad routes in the United States, indicating in each case the general location and direction of the route, the principal commodities handled, and the larger railroad systems involved. This chapter, like the preceding one, may profitably be studied in connection with the survey of the areas of production of selected commodities undertaken in Chapter IX.

The traffic routes in the United States, excluding the Great Lakes and the Mississippi River, may be listed as follows:

1. Trunk Line route,
2. New York-Atlanta route,
3. Chicago-Atlanta route,
4. Mississippi Valley route,
5. Western Grain route,
6. Southwestern Gulf route,
7. Northern Transcontinental route,
8. Central Transcontinental route,
9. Southern Transcontinental route,
10. Pacific Coast route.

These routes, with only one or two exceptions, connect areas of unlike economic interest. Thus routes 2 and 3 join together the cotton, lumber, and tobacco producing South with the manufacturing states of the Northeast. Route 1, with its extension, route 5, connects the Northeastern states with the grain fields of the Northwest. Routes 6, 7, and 8 terminate upon the east in the grain belt, and, together with route 9, they tap on their western end the petroleum and live-stock districts of the Southwest, and the mineral, live-stock, lumber, and fruit regions of the Rocky Mountains and the Pacific coast. Only in the extreme West is there no sharp contrast between the character of producing areas at the termini of a major route, and route 10 is, accordingly, the least important of all those which are shown upon the map.

Generally speaking, the nature of traffic over any route can be inferred from the industry of the territory which it serves. It is desirable, however, not to rely upon inference alone, and the characteristics of the different routes will be discussed in this chapter in detail.


7
5
10
8
1
3
2
4
9
6
1 Trunk Line Route
2 New York - Atlanta Route
3 Chicago - Atlanta Route
4 Mississippi Valley Route
5 Western Grain Route
6 Southwestern Gulf Route
7,8,9 Transcontinental Route
10 Pacific Coast Route

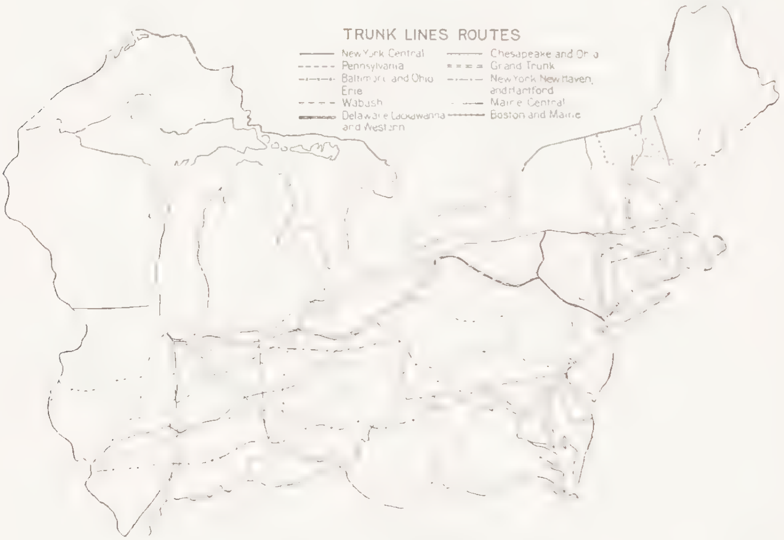
Major Railroad Routes in the United States

Route 1. Trunk Line

The most important railroad route in the United States is that between the North Atlantic seaboard and the State of Illinois. This route passes from Chicago and St. Louis along the southern shore of the Great Lakes, benefiting by the easy grades and open character of the Great Lakes basin, crosses the Appalachians in Pennsylvania, Maryland, or New York, and reaches the Atlantic seaboard on a line which touches the port of Norfolk upon the south and the cities of New York and Boston upon the north. For some purposes the whole of New England may be considered as part of the eastern terminus of the Trunk Line route. The southern boundary of this route is the Chesapeake and Ohio Railroad, and its western boundary is the Mississippi.

The larger railroads on the Trunk Line route, outside of New England, are the New York Central, the Pennsylvania, the Erie, the Baltimore and Ohio, the Wabash, and the Delaware, Lackawanna and Western Railroads. New England territory is occupied for the most part by the New York, New Haven and Hartford, the Boston and Maine, the Maine Central, the Grand Trunk, and the New York Central. All of the first-named group of carriers, except the Wabash and the Delaware, Lackawanna and Western, have termini both at Chicago and at New York. Only the Pennsylvania and the Baltimore and Ohio, however, reach the Missouri River.

The Trunk Line route originally owed its importance to the facilities for communication offered by the Great Lakes, the Ohio River, and later by the Erie Canal. We have already alluded in Chapter III to the conditions under which railroads entered this territory. The purpose of the railroads which built along the Trunk Line route in the 'fifties was, in a large way, to share in the outbound grain trade of the northern Mississippi Valley, and at the same time to promote the movement of manufactured goods from the industrial centers of the north Atlantic coast to the farming communities of the West. Their success, the intensive use of the Lake waterways, the rich stores of coal and iron which have been exploited in Pennsylvania, and the extraordinary development of manufactures along the northeastern seaboard of the United States have made the Trunk Line route the busiest avenue of traffic in the United States, as well as



Trunk Line Route

one of the most important in the world. Indeed, the railroad carriers in the district transport more than half of the passengers and more than half of the tons of freight handled by the American railroad system as a whole.

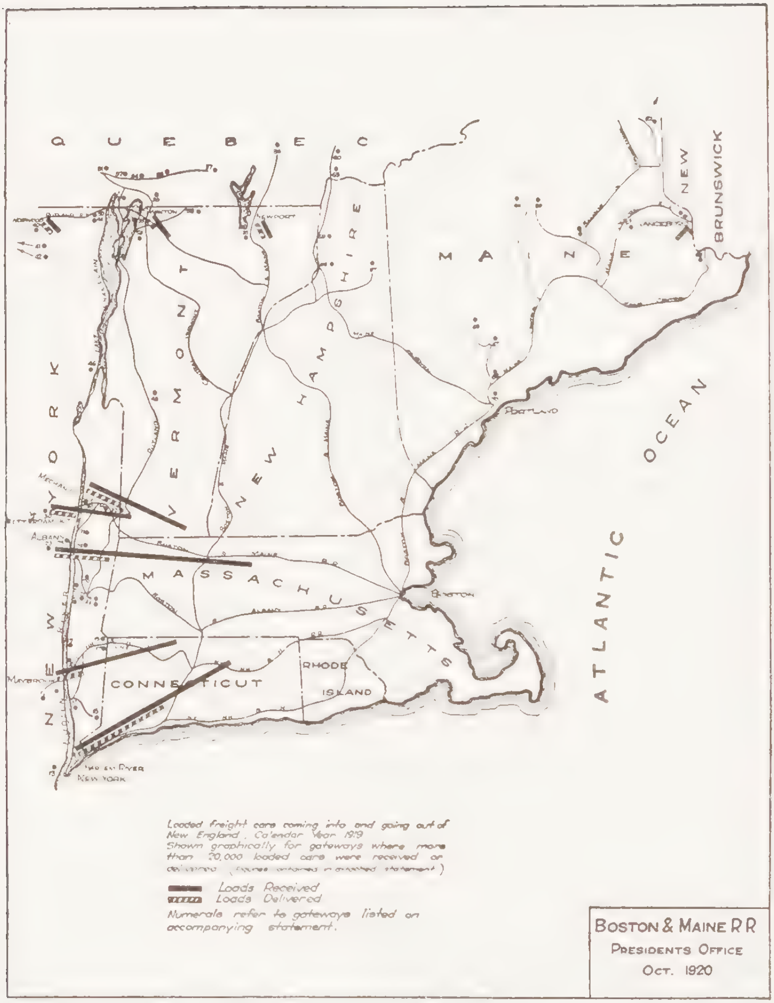
The principal commodities which move westbound over the Trunk Lines are manufactured goods and coal. Eastbound the most important articles are raw materials and food.

Relation of New England to Trunk Line Route

New England is located upon the northeastern rim of Trunk Line territory. This busy manufacturing region imports large quantities of raw materials, coal, cotton, iron, and steel; it brings in and consumes foodstuffs, and it exports a great variety of manufactured products, many of them of a highly specialized sort. While some of the New England traffic, such as cotton and fruit, comes from the Southern states, and while a considerable volume of New England manufactures finds a market in the South, most of the trade of the New England states goes to swell the east and westbound traffic of the Trunk Line systems. Naturally the preponderance of traffic, in bulk, is eastbound. The following map shows the relation between loaded cars coming into and going out of New England during the calendar year of 1919.

Such an extreme disproportion between east and westbound business makes it necessary to haul a great many empty cars westbound, but there seems to be no way to prevent this empty car movement, short of changing the entire character of New England industry.

On the west the Trunk Line route receives the grain traffic of Kansas, Illinois, Missouri, Nebraska, and the Dakotas, the wool and meat and live-stock of the Rocky Mountain states, the copper of Lake Superior, the fruit and sugar of California, and the lumber of the Pacific Northwest. The greater part of the export trade of the United States is conducted over the Trunk Line railroads. As will appear later, Western routes tend to focus in the territory occupied by the states of Illinois, Missouri, and Iowa, and the Trunk Lines are in an advantageous position to receive and carry forward such of the Western products as are not locally consumed in the northern Mississippi Valley states. In recent years, however, the competition of the railroads running south from Chicago and St. Louis to the Gulf of Mexico has been increasing, particularly as regards import and export traffic.


QUEBEC
NEW BRUNSWICK
MAINE
VERMONT
NEW HAMPSHIRE
NEW YORK
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
ATLANTIC OCEAN
PORTLAND
BOSTON
ALBANY
NEWPORT
BOSTON & ALBANY R.R.
NEW YORK
Loaded freight cars coming into and going out of New England, Calendar Year 1919
Shown graphically for gateways where more than 20,000 loaded cars were received or delivered (figures contained in attached statement)
Loads Received
Loads Delivered
Numerals refer to gateways listed on accompanying statement.
BOSTON & MAINE R R
PRESIDENTS OFFICE
OCT. 1920

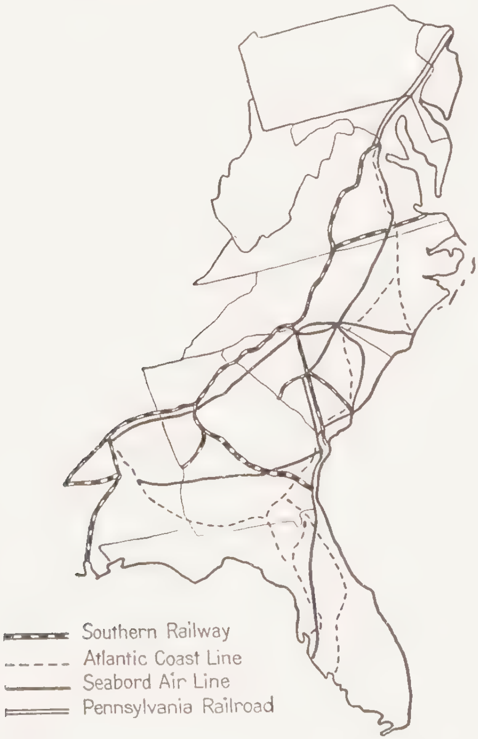
LOADED CAR MOVEMENTS INTO AND OUT OF NEW ENGLAND, 1919

Route 2, New York, Atlanta, New Orleans

Meeting the Trunk Line route upon the northeast but diverging promptly from it in a southwesterly direction is what may be called the New York, Atlanta, and New Orleans route. This route runs roughly parallel with the Appalachian Mountains, between the mountain barrier and the sea, through New Jersey, Pennsylvania, Maryland, Virginia, North and South Carolina, and Georgia.

Railroad Companies

The largest railroads in this section are the Southern Railway, the Seaboard Air Line, and the Atlantic Coast Line.



New York-Atlanta Route

Cities on the New York-Atlanta Route

The cities along the New York-Atlanta route may be classified into three groups: First, seaports such as Norfolk, Wilmington, Charleston, Savannah, Brunswick, and Jacksonville, and second, a series of towns at the head of navigation of rivers that empty into the Atlantic Ocean or the Gulf. Cities of this type include Richmond, Welden, Columbia, Augusta, and Macon. A third group includes cities along the upper edge of the Piedmont, such as Charlottesville, Lynchburg, Greensboro, Charlotte, Spartanburg, and Atlanta. Study of the map will show that the southern railways connect towns in these groups with one another and with the coast, while their location enables them to accommodate the current of traffic which flows northeast and southwest between the Southern and the Northeastern states. The northern terminus of Southern railways is Washington, D. C., where connection is made with the Pennsylvania and the Baltimore and Ohio Railroads, both characteristically Northern lines. While all three of the routes as described end on the south in the state of Georgia, a natural extension takes them southwest across the states of Florida, Alabama, and Louisiana to the Gulf ports about the mouth of the Mississippi River.

The topography of the New York-Atlanta route is favorable to railroad traffic in that there is no mountain range to cross. The railroads swing along a series of benches with no great rises or descents. The principal natural obstacle is found in the necessity of traversing a multitude of east-and-west flowing streams, some of them of considerable magnitude.[1]

Like the Trunk Line route, the southeastern route benefits by a sharp differentiation between the interests and resources of the population at either end. The Southern states, as has been pointed out, form a region of specialized agriculture. On the other hand, the industrial activity of the Southern region is slight as compared with that of the states in the Northeast, so that manufactures of all sorts and coal move southbound over the New York-Atlanta route, while northbound the principal traffic consists of cotton, lumber, citrus fruits, and fresh vegetables. In both value and bulk the northbound traffic predominates.

Route 3, Chicago-Atlanta

This route begins in the territory north of the Ohio River and stretches southeast, cutting the New York-Atlanta route at Atlanta, and continuing southeast to the Gulf and to the south Atlantic coast. Over this route pour the grain and flour of the northern Mississippi Valley and the manufactures of Chicago, St. Louis, and the cities of Ohio, Indiana, and Illinois. Northbound the principal commodities are similar to those which leave the Southern states for the Atlantic seaboard. They include, that is to say, cotton, fruit, lumber, and fresh vegetables. The preponderance of traffic is southbound.

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[1] National Geographic Society, *The Physiography of the United States*, 1896.

At one time railroads operating over the Chicago-Atlanta route engaged in vigorous competition with railroads upon the New York-Atlanta route. This competition was especially active subsequent to the close of the Civil War and closely following the establishment of transportation lines and through rates into the South. Corn from Chicago was actually carried at this time *via* Boston to Atlanta and Chattanooga, while eastern manufactures were not infrequently brought west *via* Cincinnati and Louisville, or *via* Chicago and Cairo, for delivery to Southern destinations.[1]

Agreement between carriers put an end to this form of circuitous competition. There still remained a species of market competition between the routes east and west of the Allegheny Mountains, the one seeking to supply the Southern states with Eastern manufactures, and the other striving to promote the sale of manufactured products of the Middle West. Even to-day cities like Atlanta enjoy advantages by access to two competing sources of supply, although some of the rate discriminations which Atlanta and other cities similarly situated once enjoyed have been suppressed.

Formerly the Southern railroads west of the Appalachian Mountains were sharply separated from those upon the east. The development of great systems south of the Appalachians has tended to make the states of Alabama, Georgia, and Florida a common market and a common source of supply for both New York and Illinois, and to lead the Eastern and the Western railroad systems to interlace at their southern extremities. The northeast-southwest route remains, however, distinct from the northwest-southeast route.

Railroads in the Southeast

There are no railroad companies which handle traffic over their own rails all the way from Chicago to Atlanta and the Southeast. The nearest approach to this is the Illinois Central Line from Chicago to Birmingham. The Southern Railway, however, has a direct route from Cincinnati to Southern and Southeastern points, and the Louisville and Nashville not only operates between Cincinnati and Atlanta and between Louisville, St. Louis, and Birmingham, but, by virtue of its control of the Atlantic Coast Line, has a reliable connection with most points on the South Atlantic Seaboard. In most instances freight is carried between Chicago and the Ohio River by railroad companies which also serve the Trunk Line route. No attempt is made to indicate all the possible lines in this Northern territory, although a few of the important companies are shown upon the map.

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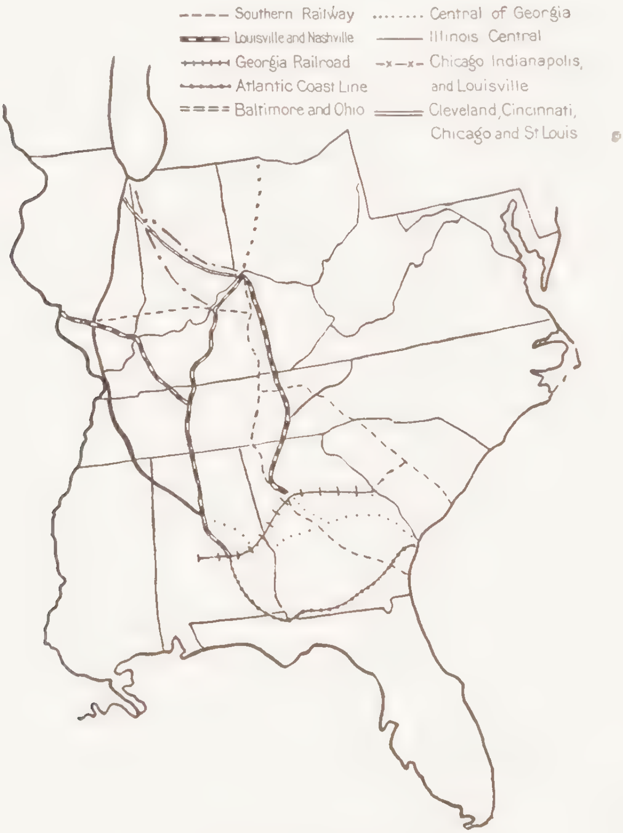
[1] Freight Bureau *v.* C. N. O. & T. P. R. Co. *et al.*, 6 I. C. C. 195–256, 216 (1894).



Chicago-Atlanta Route

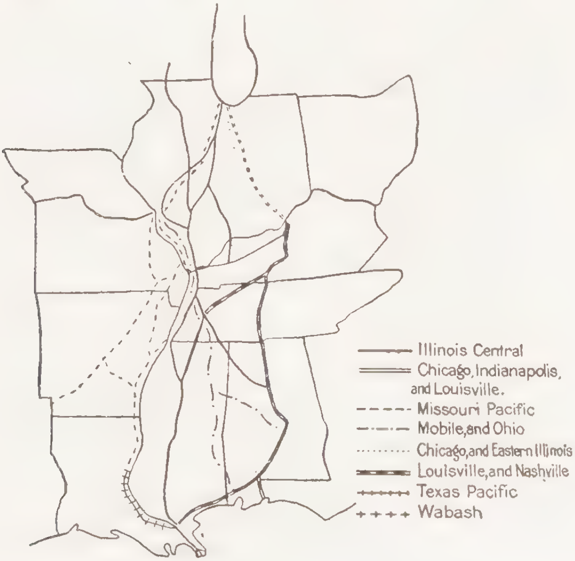
Route 4, Mississippi Valley

The products of the northern Mississippi Valley not only press into the old South for local consumption, but they follow the river to Mobile and to New Orleans and pass through these cities on their way to foreign markets. Tropical fruits such as bananas, as well as coffee, potash, guava, sugar, nitrates, and a great variety of other products from South and Central America enter the United

States at ports in Texas, Louisiana, and Alabama and travel northward to points beyond the Ohio and Missouri Rivers. There is good railroad service on perishable fruit northbound. The Illinois Central runs high-class freight trains from New Orleans to Chicago, a distance of more than 900 miles, in less than 80 hours. Vegetable and fruit trains from the Mississippi territory to Chicago are operated over a distance of 771 miles in less than 68 hours.[1] The competition between the Mississippi Valley route and the Trunk Line route is very keen, since many products destined to Illinois or neighboring states can enter or leave the country equally well by way of the north Atlantic seaboard or by way of the Gulf.

Rail Carriers in the Mississippi Valley

The Mississippi River itself is not largely used to-day as a transportation agency, although we have already seen that an attempt is being made at this moment through the Warrior Service to revive what was once a large traffic.


Illinois Central
Chicago, Indianapolis, and Louisville.
Missouri Pacific
Mobile, and Ohio
Chicago, and Eastern Illinois
Louisville, and Nashville
Texas Pacific
Wabash

Mississippi Valley Route

The chief rail carriers south of St. Louis and the Ohio River are the Missouri Pacific upon the western side of the river and the Illinois Central, Mobile and Ohio, and Louisville and Nashville upon the east. The territory between St. Louis, the Ohio River crossings, and Chicago is served by a number of railroads, including the Illinois Central, the Wabash, the Chicago and Eastern Illinois, the Chicago, Indianapolis, and Louisville, and others.

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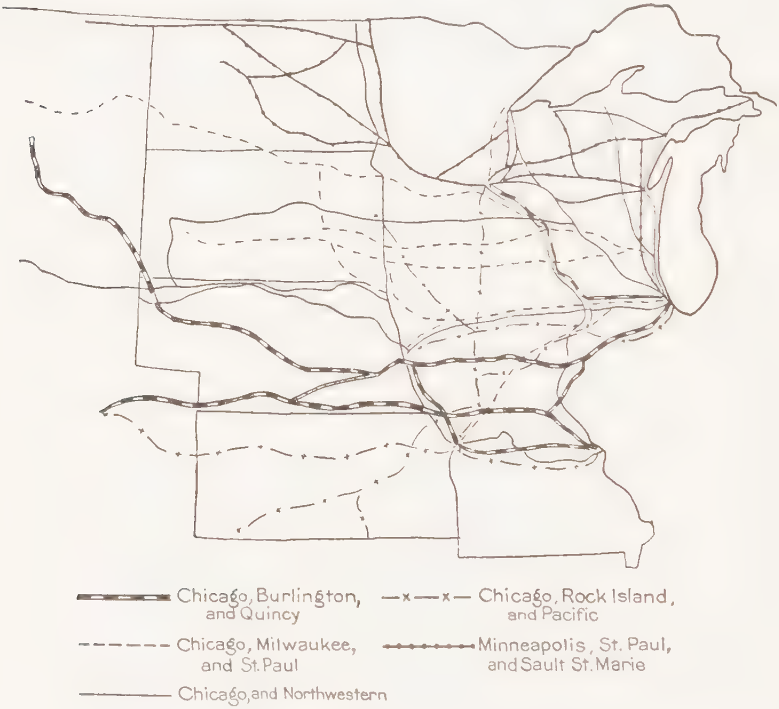
[1] C. H. Markham, president Illinois Central R. R., in *Traffic World*, July 22, 1922, pp. 179–80.

Route 5, Western Grain

West of the Mississippi River the general direction of traffic is east and west, and the principal lines of communication reach out


Chicago, Burlington, and Quincy
—x—x— Chicago, Rock Island, and Pacific
------ Chicago, Milwaukee, and St. Paul
Minneapolis, St. Paul, and Sault St. Marie
——— Chicago, and Northwestern

Western Grain Route

toward the Pacific coast. Common parlance does not, however, speak of these lines of traffic as "transcontinental" until they have crossed the Missouri River, and, as a matter of fact, railroads even some distance west of the Missouri have important movements of freight and passengers to accommodate which are not usually associated with transcontinental business. Such, for instance, is the grain traffic of the North Central states and the live stock of the Southwest. It is true, at least, of the Northern trans-Mississippi railroads, that they represent upon their eastern ends rather a western extension of the trunk lines than an eastern extension of the transcontinental properties. The railroad lines serving the grain states of North Dakota, Kansas, Minnesota, Nebraska, South Dakota, Iowa, and Missouri were referred to in Chapter IV as the "Granger railroads." The function of the Granger railroads is to collect grain at country elevators, and to transport it to primary markets, where it is cleaned, mixed, inspected, graded, and weighed. Subsequently, that portion of the crop that is not needed for local consumption passes out of the grain districts over connecting routes to more distant markets.

The most important Granger lines are the Chicago and Northwestern, the Chicago, Milwaukee, and St. Paul, the Chicago, Burlington, and Quincy, the Chicago, Rock Island, and Pacific, and the Minneapolis, St. Paul, and Sault St. Marie.

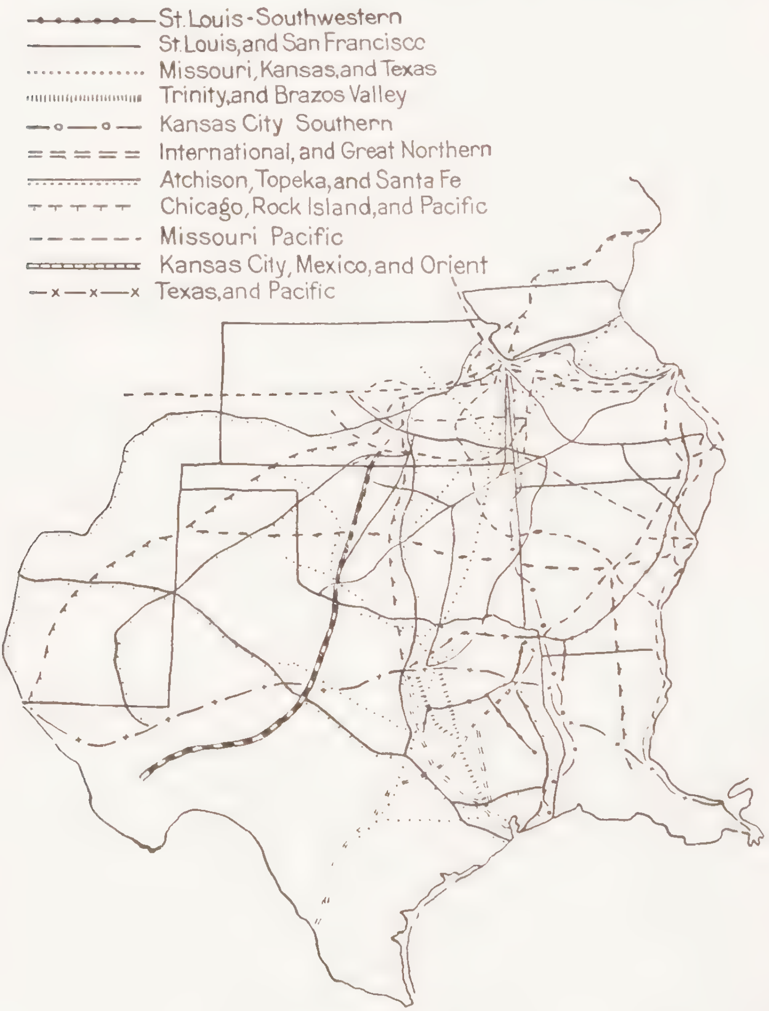
The largest portion of the Northwestern grain crop handled by these companies empties into the Trunk Line route or takes advantage of the facilities for water transportation offered by the Great Lakes, the St. Lawrence River, and the Erie Canal. Some of it, however, passes south along the Mississippi Valley route for southern consumption or for export at Galveston or New Orleans.

Route 6, Southwestern-Gulf

Another route which transports a large amount of freight is the Southwestern-Gulf route. This route reaches from Missouri, Iowa, and Illinois, southwest and south across Missouri, Oklahoma, Arkansas, and Texas to the Gulf of Mexico. The country traversed is flat except for the Ozark Mountain range and its foothills, extending from southern Missouri across Arkansas to the Red River valley on the southern boundary of Oklahoma. The railroads pass on either side of the Ozarks with an occasional bridge line across them. The important lines are based upon Kansas City and St. Louis, depending for their prosperity upon the markets which they enjoy in these cities and the connections there made with the larger traffic routes beyond.

The largest railroad systems in the Southwest are the Missouri Pacific, the St. Louis and San Francisco, the Atchison, Topeka, and Santa Fé, and the Chicago, Rock Island, and Pacific. There are, however, a number of smaller companies in this district which in the aggregate are of considerable importance. Only two companies, the Santa Fé and the Rock Island, enter Chicago on their own rails.

Traffic of other lines destined for points east of Kansas City and St. Louis is served by Trunk Line carriers or by the Granger railroads.

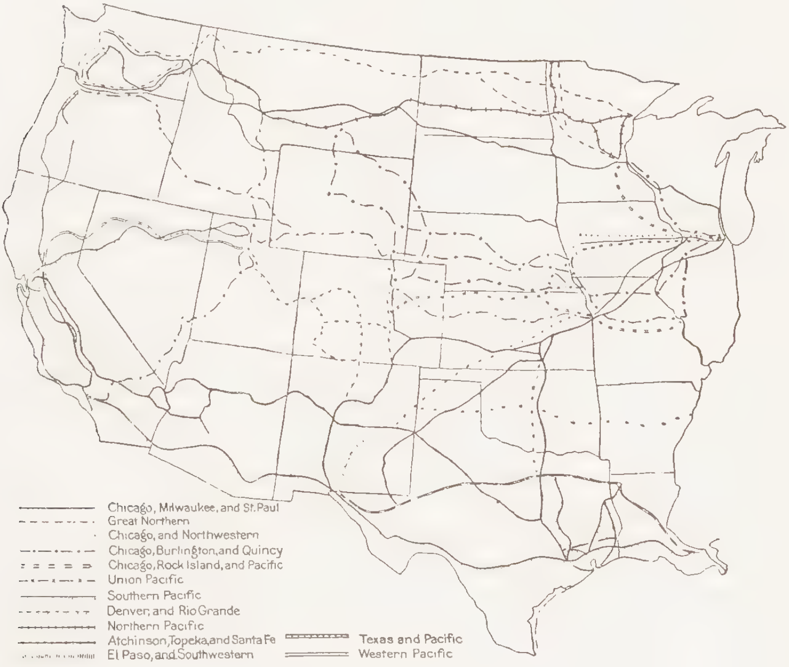

St. Louis-Southwestern
St. Louis, and San Francisco
Missouri, Kansas, and Texas
Trinity, and Brazos Valley
Kansas City Southern
International, and Great Northern
Atchison, Topeka, and Santa Fe
Chicago, Rock Island, and Pacific
Missouri Pacific
Kansas City, Mexico, and Orient
Texas, and Pacific

SOUTHWESTERN-GULF ROUTE

Routes 7, 8, 9, Transcontinental

The Trunk Line, Mississippi Valley, and the Chicago-Atlanta routes converge in the State of Illinois and in eastern Missouri. Here they meet the far-ranging transcontinental routes stretching in narrowing lines from the Mississippi River to the Pacific Coast.

The principal transcontinental routes which center in Illinois are three. One, made up mainly of the Chicago, Burlington, and Quincy, the Chicago, Milwaukee, and St. Paul, the Great Northern, and the Northern Pacific Railroads, runs northwest from Chicago to St. Paul, thence west between the fortieth and forty-eighth parallels of latitude to Portland and Seattle upon the north Pacific coast. This may be called the northern route.


Chicago, Milwaukee, and St. Paul
Great Northern
Chicago, and Northwestern
Chicago, Burlington, and Quincy
Chicago, Rock Island, and Pacific
Union Pacific
Southern Pacific
Denver, and Rio Grande
Northern Pacific
Atchinson, Topeka, and Santa Fe
El Paso, and Southwestern
Texas and Pacific
Western Pacific

TRANSCONTINENTAL ROUTES

The central transcontinental route goes nearly due west from Chicago to Omaha. From there it proceeds *via* Denver and Salt Lake City to Sacramento and San Francisco Bay, with branches in western Colorado and Utah which reach diagonally northwest to Portland and southwest to Los Angeles. The principal railroads involved are the Chicago and Northwestern, the Chicago, Rock Island, and Pacific, and the Chicago, Burlington, and Quincy upon the eastern end, and the Union Pacific, the Denver and Rio Grande, the Central Pacific, and the Western Pacific in the center and west.

A third transcontinental route opening out in Illinois is that of the Atchison, Topeka, and Santa Fé Railway Company. This railroad is, with the exception of the Chicago, Milwaukee, and St. Paul, the only carrier which connects Chicago with the Pacific coast over its own rails. Its lines run from Chicago to Kansas City, thence west to Colorado, and thence southwest into New Mexico. Since 1909 the Santa Fé has operated also a more direct route from Kansas City southwest through Wichita and the Panhandle of Texas to a point upon its main line near Albuquerque, New Mexico. From Albuquerque the Santa Fé proceeds westerly through New Mexico and Arizona to California, where its tracks turn to the north and reach a terminus on San Francisco Bay.

In addition to three transcontinental routes just mentioned, a fourth, the southern route, extends from the southern part of California through New Mexico, Arizona, and Texas, to a junction with the southern end of the Mississippi Valley and the New York, Atlanta and New Orleans routes, affording an indirect connection with Chicago, and a more direct one with the cities of the Atlantic seaboard.

The principal carrier on this route is the Southern Pacific Company, which operates a railroad from California points to New Orleans, and a line of steamships from New Orleans to New York. The combined water and rail line is commonly known as the Sunset Route.

Traffic of the Transcontinental Routes

The transcontinental routes are very long, and they cross regions which differ widely from one another in climate, natural resources, and density of population. On their eastern end the transcontinental railroads do a considerable local business, multiplying their feeding lines and serving intensively a wealthy agricultural population. Further west, these railroads enter the range country, more arid in character and used chiefly for the pasturage of cattle and of sheep. Finally, upon the Pacific coast, the transcontinental railroads again find an agricultural community, which produces little grain but a vast amount of lumber and a great variety of fruits.

The most important commodities which move westbound over the transcontinental routes are steel products, coal, cotton, automobiles, and manufactured products. Eastbound the largest volume of shipments is of fresh fruits, canned goods, vegetables, and lumber.

During the calendar year 1920 the heavy tonnage of carload products passing eastward through the Union Pacific terminal at Council Bluffs was as follows:[1]

Article	Number of carloads
Lumber, etc	35,891
Apples and other fresh fruits	32,909
Citrus fruits	9,176
Canned goods	5,098
Vegetables	4,210
Sugar, etc	4,148
Coal	2,472
Wool, etc	1,625
Eggs and poultry	218

The great bulk of fruit shipments out of California goes by way of Ogden, because of the necessity for speed, the greater ease of diversion, and the cooler climate. Early in the season, however, a large part of the citrus fruit originating south of Fresno goes through El Paso in order to avoid the cold weather of the Northern states. Live-stock prefers the central rail lines because of the greater speed and absence of transshipment. Coal, grain in bulk, and oil prefer the Ogden to the Sunset route because the Sunset route requires the carrier to transfer from rail to boat at Galveston or New Orleans, and from boat to rail or warehouse at New York. Earthenware is fragile and cannot stand rehandling, therefore little of it goes over the Southern lines. Emigrant movables follow the emigrant.

The commodities moving in largest volume *via* El Paso are dried fruits, dried vegetables, lumber, canned goods, sugar, and infusorial earth. The routing of canned goods is affected by climatic conditions, as during the winter season shippers prefer to use the Southern route. Most of the dried vegetables are beans, and the bulk of the dried beans moves to points in Louisiana and Texas, the natural outlet for which is El Paso. During 1921, 26 per cent of all the sugar moving over the Southern Pacific system went east *via* El Paso and 74 per cent *via* Ogden. The Ogden sugar originated in northern California and was destined to points in Missouri River, Chicago and Northwest territories; the 26 per cent which traveled through El Paso was in large part beet sugar, produced in southern California, and destined to points in Texas in competition with cane sugar from Louisiana. The natural outlet and the most reasonable route for the southern California sugar, as also for such northern California sugar as moved to Texas, was through El Paso. Most of the infusorial earth produced in the State of California is produced at Lompoc in the southern part of the state, and is consumed by the sugar refineries in Texas, Louisiana, Cuba, and along the Atlantic seaboard. Here again a natural route is *via* El Paso. Dried fruit, including raisins, on the other hand, and lumber are strongly competitive as between the central and southern routes.

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[1] In the Matter of Consolidation of the Railway Properties of the United States into a Limited Number of Systems, 63 I. C. C. 455, 560, 1921.

A comparison of tonnage eastbound with the tonnage westbound and of tonnage *via* the El Paso, Ogden and Portland gateways yields the following results:

PERIOD MARCH TO NOVEMBER, 1920

Gateway	Westbound (Tons)	Eastbound (Tons)
Via El Paso	802,226	1,046,733
Via Ogden	1,076,395	1,616,861
Via Portland	571,172	749,557
	2,449,793	3,413,151

The preponderance of transcontinental traffic is shown by the preceding figures to be eastbound, a fact to be expected in view of the large volume of manufactured goods moving west.

Route 10, Pacific Coast

There is continuous rail connection north and south along the Pacific coast from Puget Sound in the north to San Diego in the south. The nearness of the ocean causes competition between rail and water carriers to be very keen upon this route. Indeed, the rail rate from San Francisco to Los Angeles is less than that to many intermediate points in the San Joaquin Valley, because of the depressing effect of water service upon the rates for through service between points connected by water lines. Some freight, nevertheless, moves all rail between northern and southern California cities, and between central and southern California, taken as a whole, and the States of Washington and Oregon.

This list of railroad routes is not, of course, a complete enumeration of the paths followed by the traffic of the United States, omitting as it does the many minor routes contained within the larger ones, although these minor routes are frequently clearly marked and carry a considerable burden of traffic. It will serve, however, to indicate the major flows of traffic, and will show the railroad groups over which these flows take place.

We may now consider in more detail the movements of certain of the commodities referred to in this and in earlier chapters.

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CHAPTER XII

COMMODITY MOVEMENTS—GRAIN

Commodity Movements

If we take the routes described in the previous chapter and add to them the Great Lakes, the Mississippi River, and the system of pipe lines engaged in the transportation of petroleum, we shall have a reasonably comprehensive idea of the principal highways over which goods move from their localized sources of production in the United States to their widely distributed and often distant markets.

This general view should now be supplemented by further examination of a few commodities.

Grain

The reader is referred to Chapter X for a partial discussion of the movement of grain with special reference to the Great Lakes and to the handling of the Canadian harvest. The following pages consider more particularly the directions of movement of this commodity within the United States.

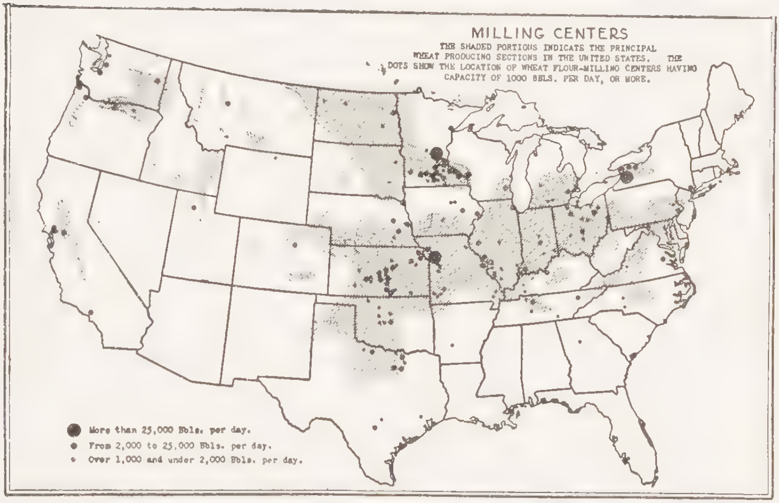
Concentration of Grain at Country Elevators

The first step in the transportation of grain is its carriage from the farm to the country elevator close to railroad tracks. This haul is accomplished by horse and wagon or by auto truck. The country elevator stores the grain which it receives for subsequent rail shipments, and frequently cleans, mixes, and drys it in order to improve its grade.

Shipments of Grain from Country Elevator to Primary Market

About 70 per cent of the grain reported by country elevators and warehouses is shipped to large terminal markets. A smaller proportion (7 per cent) is forwarded to smaller centers, and the balance is sold to mills, feeders, interior brokers, retailers, etc. The primary terminal markets for wheat, which is the most important grain from the point of view of transportation, are Minneapolis, Chicago, Duluth, Kansas City, Omaha, Milwaukee, St. Louis, Peoria, Indianapolis, and Cincinnati.

Generally speaking, the current of grain movement is from west to east, with a certain amount of southern and southeastern flow, but with comparatively little western, northern or southwestern movement.


MILLING CENTERS
THE SHADED PORTIONS INDICATE THE PRINCIPAL WHEAT PRODUCING SECTIONS IN THE UNITED STATES. THE DOTS SHOW THE LOCATION OF WHEAT FLOUR-MILLING CENTERS HAVING CAPACITY OF 1000 BBLS. PER DAY, OR MORE.
● More than 25,000 Bbls. per day.
● From 2,000 to 25,000 Bbls. per day.
● Over 1,000 and under 2,000 Bbls. per day.

Milling Centers[1]

Source of Grain Received at Primary Markets

The most complete statistics regarding the sources of grain received at primary markets are those compiled by the Federal Trade Commission for the five crop years 1912-13 to 1916-17. According to this statement, Chicago obtains the bulk of its grain from Illinois (52 per cent) and Iowa (31½ per cent). It also obtains a little from Minnesota and South Dakota to the northwest, but practically none from Ohio, Michigan, or Indiana to the east or from Missouri to the south. Minneapolis receipts are chiefly from Minnesota (36 per cent) and the Dakotas (57 per cent), and a smaller proportion from Montana, all to the westward of this market. Practically all Duluth receipts are from the same area. Neither market receives much of anything from Wisconsin, Illinois, Iowa, or Nebraska. Kansas City obtains more than half its grain from Kansas to the west and more than one-fourth from Nebraska to the northwest. Less than 4 per cent is derived from Missouri and practically nothing from Illinois, on the east. Kansas City also obtains a substantial proportion from Iowa (6½ per cent), to the north, but much less from Oklahoma, on the south. St. Louis obtains above 40 per cent of its grain from Illinois points lying north and east. To what extent this movement is from the east rather than the north is difficult to determine. In so far as the movement is westward, it is exceptional. St. Louis also receives about 20 per cent from Missouri, 26 per cent from Iowa, and a substantial amount from Nebraska (6½ per cent).

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[1] Bureau of Railway Economics, "Commodity prices in their relation to transportation costs." Bulletin No. 7, February, 1925.

Milwaukee obtains practically nothing from the south or east (Illinois, Indiana, or Michigan), securing the great bulk of its receipts from Wisconsin and the states west—*i.e.*, Minnesota, Iowa, and South Dakota. Omaha, like St. Louis, is exceptional in obtaining heavy receipts from Iowa (22½ per cent) directly to the east. It procures practically nothing, however, from either Missouri to the southeast or Kansas to the south, the balance of its grain being obtained chiefly from Nebraska (63 per cent). About 13 per cent, however, is derived from South Dakota, to the northwest. Peoria supplies are obtained almost exclusively from Illinois and Iowa, and those of Indianapolis from Indiana and Illinois. Cincinnati draws some grain from its own state, but obtains much more from Indiana and from Illinois.[1]

It will be noted that the largest six primary wheat markets and milling centers, with the exception of Buffalo, are located within or immediately adjacent to the areas of largest wheat production. These markets are also important terminals of grain-carrying trunkline railroads. Chicago, Duluth, and Milwaukee occupy water shipping positions on the Great Lakes, while Kansas City and St. Louis have potential facilities for shipping by river.

Functions of Primary Markets—Reshipment to Secondary Markets

At primary markets grain is inspected, graded, cleaned, mixed and conditioned, and stored in terminal elevators. From these elevators much grain is withdrawn for local consumption, including milling.

There is little movement from one primary market to another, but grain proceeds from concentrating points in the grain-producing districts toward centers of consumption in the South and East. Seven-eighths of the wheat produced in the United States is milled and consumed within its borders; one-eighth is exported. The grain intended for domestic consumption falls into the channels indicated in the previous chapter, with the result that the surplus of the Mississippi Valley distributes itself in the noncereal-growing commonwealths south and east of Indiana and Illinois. This movement is facilitated by the development of secondary markets which provide facilities for local distribution or spring up where a break in transportation occurs, as at Buffalo or at points upon the Ohio River.

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[1] United States Federal Trade Commission, *Report on the grain trade*, vol. i, p. 133, 1920.

Rate Competition Among Markets, Outbound

Whether grain moves through one primary market or another is partly determined by the presence or absence of local demand, and partly by the relative cost and efficiency of storage and handling facilities at different places.

Nor should it be overlooked that grain rates in the Northwest are delicately balanced between the larger cities to effect a distribution of business which both towns and competing railroads accept as preferable to open warfare, and that this rate adjustment has a powerful influence upon the flow of traffic.[1] Thus the rail-Lake-and-rail rate from Minneapolis to New York *via* Duluth is six and one-half cents more than the Lake-and-rail rate from Duluth to New York. The rate from Minneapolis *via* Chicago to the East bears a definite relation to the rate on the Minneapolis-Duluth-New York route, so that traffic may move freely either way.[2] The rate from St. Louis to the East is a fixed number of cents over that from Chicago, and that from Kansas City is a fixed number of cents over the rate from St. Louis.[3] The rate from Omaha is generally the same as that from Kansas City to Eastern points north of the Ohio River,[4] although higher from Omaha when shipments are made to Memphis, New Orleans, Galveston, or Carolina territory. Towns upon the Mississippi River between St. Louis and Dubuque take the St. Louis rate and those on the Missouri River between Kansas City and Omaha take the Kansas City rate.

Inbound Gathering Rate

These are outbound rates. The price which the primary market can afford to pay for country grain depends, also, upon the rate from the country elevator to the primary market, as well as upon the rate from that market to points east and south. It appears, for instance, that the inbound rate to Milwaukee is the same as that to Chicago from a considerable territory of origin. Omaha and Kansas City compete in the purchase of grain as far south as the two northern tiers of counties in the State of Kansas. The rates into Des Moines, Sioux City, and Sioux Falls have much to do with the ability of these towns to compete with one another and with Omaha.[1] Independence, Missouri, and Kansas City are rivals.[2] Cairo, Illinois, competes with St. Louis and Memphis in the purchase of grain in Illinois, Iowa, Nebraska, and Missouri, and in the sale of grain in the Southeastern and Mississippi Valley territories, and in Arkansas and Louisiana.[3] These are more or less chance illustrations, showing the relations of rivalry between different grain shipping and buying centers, and suggesting the importance of railroad rate adjustments in determining the flow of wheat.

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[1] Proportional Grain Rates from Minnesota and Wisconsin to Eastern Destinations, 68 I. C. C., 665, 674 (1922).

[2] Rates on Grain and Grain Products, from Northwestern Points, 56 I. C. C. 133, 141 (1919).

[3] Southern Illinois Millers Association v. L. & N. R. R. Co. *et al.*, 23 I. C. C. 672 (1912).

[4] Kansas City Transportation Bureau v. A. T. & S. F. Ry. Co. *et al.*, 16 I. C. C. 195 (1909); Atchison Board of Trade v. A. T. & S. F. Ry. Co., 80 I. C. C. 350, 354 (1923).

Transit Privileges

Transit privileges on grain permit the stopping of a shipment at a transit point to undergo commercial processes such as grading, mixing, and drying. A "milling-in-transit privilege" allows grain to be unloaded, milled into flour, and then reshipped. Shipments which take advantage of these privileges are charged local rates into the transit points, but when reshipped they are forwarded to ultimate destination at the balance of the through rate, so that the total freight rate upon wheat milled in transit is no more than the carrier would have collected had the consignment moved without interruption from point of origin to final stopping-place. When privileges of this kind are in force the adjustment of rates into and out of particular markets becomes of less importance and the number of centers which may compete in the intermediate handling of grain becomes greatly enlarged.

Export Grain Movements

The movement of grain for export proceeds generally from primary markets either east or south.

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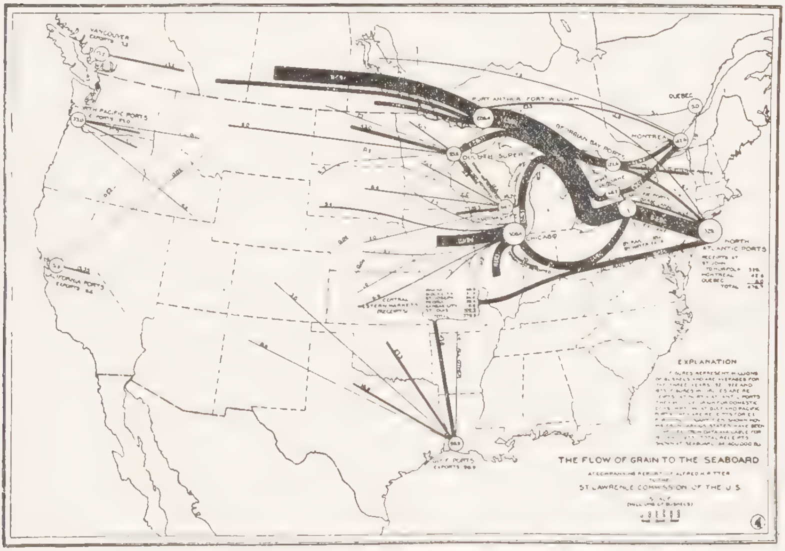
[1] South Dakota R. R. Commissioners v. Director General, 73 I. C. C. 347 (1922).

[2] Waggoner & Gates Milling Co. v. Director General, 69 I. C. C. 83 (1922).

[3] Cairo Board of Trade v. A. T. & S. F. Ry. Co., 61 I. C. C. 219 (1921).

With respect to the actual distribution, the United States Department of Commerce describes the situation as follows:

> "The Gulf ports draw most of their wheat for export from Texas, Oklahoma, Colorado, and Kansas, and from southern Missouri and southern Illinois. The western sections of the first four states ship through the port of Galveston, while the eastern sections, southern Missouri, and southern Illinois ship through New Orleans. Missouri River points are also generally tributary to the Gulf rather than any other seaboard. The North Atlantic ports of the United States draw most of their wheat for export from the great wheat-producing region north of Kansas, and also the section east of the Mississippi and north of the Ohio Rivers. These ports also compete with the Gulf ports for traffic from the Central Western section and the Missouri River territory. The eastern Canadian ports of Halifax, St. John, and primarily Montreal, draw wheat from these North Central States and also from the great wheat fields of Canada, which are located in Manitoba, Saskatchewan, and Alberta. In reality the American and Canadian movements should be considered as one unit because American ports handle large quantities of Canadian grain and, on the other hand, Canadian ports



The Flow of Grain to the Seaboard

> handle large quantities of American grain. The routes to the ports of both countries are strongly competitive.
>
> "The Pacific coast ports of Portland and Seattle draw wheat for export from the wheat-producing states in the Northwest—namely, Oregon, Washington, Idaho, and Montana—while Vancouver also handles some grain from western Canada. San Francisco does not figure as an important port in the export grain trade and is unable to draw much wheat from the Northwest.
>
> "It is not to be assumed that these routes are definite and fixed. As a matter of fact, there is constant shifting, but the general movement is as stated. Car shortages, the availability of inland water transportation, or the conditions of ocean transportation occasionally enable one seaboard to draw from the territory which is generally tributary to another. In 1920 and 1921, for instance, some wheat from the Pacific Northwest was shipped to Gulf ports for export because of the abnormally high ocean rates prevailing at the Pacific ports at that time." [1]

Threefold Character of Competition on Grain Shipments

We have in the case of grain a threefold competition: first, between parallel railroad lines; second, between rail and water services; third, between routes to Atlantic ports, whether Lake or rail, and routes to Gulf ports, whether river or rail. Nor is, of course, the rivalry limited to the carriers themselves, but it extends to numerous cities on one or the other of possible grain routes which are anxious to participate in the work of grain distribution.

Relative Railroad Rates to Seaboard Cities

The following table shows how closely related are the rail rates on wheat from a point like Chicago to New York with rates from the same point of origin to other possible export destinations.

The basic rate set forth in this table is the rail rate from Chicago to New York. The inland rate to New Orleans all-rail is the same as that to New York, while the rate to Philadelphia is one cent and that to Baltimore one and one-half cents less than the New York rate.

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[1] United States Department of Commerce, Trade Information Bulletin No. 215, "Transportation in relation to the export trade in agricultural products," by Roland M. Kramer, 1924, p. 3.

TRANSPORTATION CHARGES ON WHEAT FROM CHICAGO TO LIVERPOOL AS OF JULY 15, 1923

(Rates in cents per 100 pounds)

Routes	Inland	Fobbing	Insurance *	Ocean †	Total
Via New York:					
All-rail	22.5	3.0	0.4	7.0	32.9
Lake and rail	21.67	3.0	.4	7.0	32.07
Lake and canal	18.5	4.5	.4	7.0	30.4
Via Philadelphia:					
All-rail	21.5	2.5	.4	7.0	31.4
Lake and rail *via* Buffalo	21.17	2.5	.4	7.0	31.07
Lake and rail *via* Toledo	19.5	2.5	.4	7.0	29.4
Via Baltimore:					
All-rail	21.0	2.5	.4	7.0	30.9
Lake and rail *via* Buffalo	21.17	2.5	.4	7.0	31.07
Lake and rail *via* Toledo	19.5	2.5	.4	7.0	29.4
Via New Orleans:					
All-rail	22.5	3.0	.7	14.0	40.2
Rail and water	18.9	3.0	.7	14.0	36.6
Via Montreal:					
All-water	11.85	1.25	.5	12.5	26.1
Lake and rail	20.84	1.25	.5	12.5	35.09

* The value of wheat on which marine insurance is based was $1.18 per bushel.

† Rates are quoted in sterling, which is converted at $4.60.

Origin of Seaboard Differentials

The relationship between the New York, Philadelphia, and Baltimore rates on grain has its origin as far back as the seventh and eighth decades of the nineteenth century, when the New York Central Railroad, identified with New York City, the Pennsylvania Railroad, identified with Philadelphia, and the Baltimore and Ohio Railroad, representing Baltimore, as well as other railroads in trunk-line territory, established rates to Atlantic seaboard cities designed to distribute eastbound business among the various towns upon the seaboard, and thus indirectly among the great railroad systems which served these towns.

In 1881 grain is said to have constituted 73 per cent of the total tonnage carried by the trunk lines to the principal Atlantic ports.[1]

Differential Rates

The existing differentials on grain and grain products are as follows:

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[1] The New York Harbor Case, 47 I. C. C. 643, 682 (1917).

COMMODITY RATES ON GRAIN AND GRAIN PRODUCTS

Domestic	Boston two cents over New York
	Philadelphia two cents under New York
	Baltimore three cents under New York
Export grain	Boston same as New York
	New York one and one-half cents over Baltimore
	Philadelphia one-half cent over Baltimore
Export grain products, except flour	Boston same as New York
	Philadelphia two cents under New York
	Baltimore three cents under New York
Export flour	Boston same as New York
	Philadelphia one cent under New York
	Baltimore two cents under New York

By domestic business is meant traffic consigned to a railroad for local consumption; by export business, traffic forwarded to the seaboard for transshipment to a foreign destination. The Interstate Commerce Commission has approved export differentials in principle, although it expressed the opinion in 1925 that, in the case of grain and grain products shipped from points west of the Mississippi, the export rate should be the same whether the consignment was forwarded through New York, Philadelphia, Baltimore, or Boston, on the ground that mileage differences might be neglected in hauls of such length.[1]

It may be added that export differentials are employed in connection with other commodities than eastbound grain. This, however, is another story.

Lake and Rail Differentials

In addition to the port differentials described in the preceding paragraph, there are established differences between all-rail rates and rates on shipments which make partial use of Lake or canal transportation between the Middle West and the Atlantic seaboard. Generally speaking, all-railroad rates are higher than rail-and-Lake or rail-and-canal rates, because the cost of rendering the service over mixed routes is less and the quality of the service inferior. A similar difference in rates exists between what are known as standard and substandard or differential rail routes. Differential rail routes are combinations of carriers which offer service between the Atlantic seaboard and the Middle West which is slower, or more circuitous than, or otherwise inferior to standard services. In order to enable such routes to obtain a share of the business offering they are permitted by other carriers to charge a lower than the standard rate. The difference between standard and differential rates is as much as eight cents first class from Chicago to New York, with lesser amounts for lower classes.

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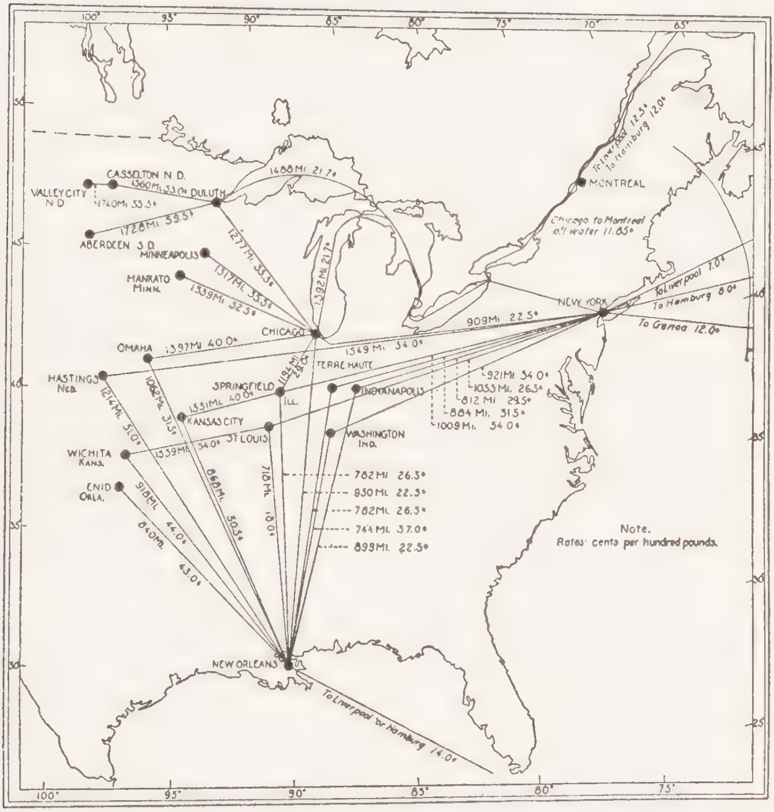
[1] Maritime Association of Boston Chamber of Commerce v. Ann Arbor R. R. Co., 95 I. C. C. 539, 569 (1925). The same decision criticized the practice of applying a modified system of differentials on grain reaching Buffalo by Lake and thence proceeding to New York, Philadelphia and Baltimore by rail. Rates are now accordingly the same from Buffalo to the ports mentioned upon ex-Lake grain.



Freight Rates on Export Wheat[1]

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[1] United States Department of Commerce, *Transportation in Relation to the Export Trade in Agricultural Products, sup. cit.*

Relative Grain Rates to New Orleans and to North Atlantic Seaboard Cities

The third type of competition which is important in the case of grain is that between routes from the Middle West to north Atlantic ports, and routes from the Middle West to Gulf ports. The wheat rate from Chicago to New Orleans is the same as the rate from Chicago to New York. The relationship which exists between other cities is indicated by the diagram on page 229.

During the early years of the grain trade little grain reached the Gulf except that floated down the Mississippi for local consumption in the Southern states. As the grain-producing areas moved west and southwest, however, and as the rail service in the southern Mississippi Valley became more efficient, a good deal of export grain and flour began to move to Southern ports for transshipment.

The table already printed on page 227 indicates the relative expense of shipping wheat from Chicago to Liverpool by the Atlantic seaboard and by the Gulf, taking into account not only rail rates in the United States but also insurance and ocean charges.

The following table presents similar information for flour, not only from Chicago but also from Minneapolis, Kansas City, St. Louis and Buffalo:

TRANSPORTATION CHARGES ON FLOUR FROM CERTAIN INLAND SHIPPING POINTS TO DESIGNATED FOREIGN PORTS, AS OF JULY 15, 1923

(In cents per 100 pounds)

Routes	Liverpool				Rotterdam			
	Inland	Insurance*	Ocean	Total	Inland	Insurance*	Ocean	Total
Via New York from—								
Chicago	23.5	1.8	15.0	40.3	23.5	2.2	15.0	40.7
Minneapolis	36.5	1.8	15.0	53.3	36.5	2.2	15.0	53.7
Kansas City	41.0	1.8	15.0	57.8	41.0	2.2	15.0	58.2
St. Louis	27.5	1.8	15.0	44.3	27.5	2.2	15.0	44.7
Buffalo	16.0	1.8	15.0	32.8	16.0	2.2	15.0	33.2
Via New Orleans from—								
Chicago	23.5	2.2	20.0	45.7	23.5	2.7	19.0	45.2
Minneapolis	35.0	2.2	20.0	57.2	35.0	2.7	19.0	56.7
Kansas City	30.5	2.2	20.0	52.7	30.5	2.7	19.0	52.2
St. Louis	23.5	2.2	20.0	45.7	23.5	2.7	19.0	45.2
Via Portland† from Spokane	27.0	1.7	43.0	71.7	27.0	1.7	43.0	71.7

* The value of export flour was estimated at $5.50 per barrel.

† Inland charges includes 30 cents per ton wharfage and 35 cents per ton for loading from cars on European shipments.

According to this tabulation the Atlantic seaboard route is cheaper from Chicago, Minneapolis, St. Louis, and Buffalo, but the Gulf route is less expensive from Kansas City. From points south and southwest of Kansas City the advantage of New Orleans is, of course, increased.

Receipts of Grain at Seaboard Cities

The grain receipts at the principal seaboard cities in 1925 were as follows:

GRAIN RECEIVED AT SIX ATLANTIC SEABOARD PORTS
CALENDAR YEAR 1925[1]

Ports	1,000 bushels
New York	189,162
Boston	11,911
Philadelphia	55,933
Baltimore	35,552
New Orleans	32,039
Montreal	179,959
Total	504,556

Out of a total of 504,556,000 bushels, 238,631,000 bushels were wheat, and 107,404,000 bushels represented flour and meal.

These figures include both grain received for local consumption and grain received for export, and so they do not indicate exactly the relative volume of foreign trade in grain conducted by the chief seaboard cities. They do, however, show the volume of grain traffic upon the trunk line and Mississippi Valley routes, respectively, and the distribution of the traffic among the various ports.

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Smith, Rollin E., *Wheat Fields and Markets of the World.* St. Louis, The Modern Miller Company, 1908.

United States Congress, Senate, "Testimony taken by the Interstate Commerce Commission October 15-November 23, 1906, in Matter of Relations of Com-

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[1] Statistical Abstract, 1925, p. 678. Receipts at Baltimore include flour ground by city millers, and therefore duplicate an equivalent quantity of wheat received as grain. Flour meal and malt receipts are included in these statistics for all of the cities, reduced to their grain equivalent.

mon Carriers to the Grain Trade." Fifty-ninth Congress, Second Session, Sen. Doc. No. 278, 1907.

United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Transportation in Relation to the Export Trade in Agricultural Products*, by Roland M. Kramer. Trade Information Bulletin No. 216, 1924.

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CHAPTER XIII

COMMODITY MOVEMENTS—LIVE STOCK AND FRUIT

Live Stock

Live stock resembles grain in that the largest production is that in the northern and north central Mississippi Valley, and also in that there is a double or triple transportation movement involved.

Sale to Local Butchers

In New England, in the South, and in the Northwestern states of Oregon, Washington, and Nevada, a relatively large proportion of the product is sold to local butchers for the retail market trade. Live stock so disposed of does not enter into transportation either as animal or as product.

In the corn belt and range states, on the contrary, the proportion sold to local butchers is very small. These communities produce a surplus and are exporters rather than importers and consumers. Instead of selling to local butchers, farmers and stockmen consign their animals to commission men or dealers at the live-stock markets, or to cooperative associations, or they may sell at local shipping points to agents of the packers, who themselves undertake shipment to the primary markets.

Feeder Cattle and Sheep

Cattle and sheep from Arizona, New Mexico, and in lesser degree from Utah, Colorado, and some other Western and Southern states, are known as feeders. That is to say, a proportion of the shipments from Arizona, to take the most notable example, which may run as high as 56 per cent, are shipped by way of some live-stock market into the corn states for a period of feeding, after which they are returned to live-stock centers for slaughtering. This movement is less important in other states because the local food supply available for live stock is greater.

It follows that live-stock transportation in the United States involves first, a local gathering movement, then a concentration movement to packing centers, comparable with the shipment of grain from country to primary market, then, for a certain percentage of the product, an in-and-out movement from market to fattening fields and return, and finally, after slaughtering, the transportation of meat products to final destination.

Live-stock Markets

The principal live-stock markets are Chicago, Omaha, Kansas City, East St. Louis, St. Paul, St. Joseph, Sioux City, Fort Worth, and Denver. The rank of the different markets varies with the kind of live-stock dealt in.

RANK OF LIVE-STOCK MARKETS ON BASIS OF RECEIPTS IN 1925

Cattle and calves	Hogs	Sheep
Chicago	Chicago	Chicago
Kansas City	East St. Louis	Omaha
Omaha	St. Paul	Denver
St. Paul	Sioux City	Kansas City
East St. Louis	Omaha	St. Joseph
Fort Worth	Kansas City	East St. Louis
Sioux City	St. Joseph	St. Paul
Pittsburgh	Denver	Sioux City
Jersey City	Fort Worth	Fort Worth

These markets have stockyards where live stock can be conveniently unloaded, inspected, and exposed for sale, they have large slaughtering and packing houses, and they have access to good transportation facilities for forwarding in every direction the products into which the incoming cattle, hogs, and sheep are transformed. The advantages of markets of this type are so great that more than 59 per cent of all the cattle, 63 per cent of all the hogs, and 83 per cent of all the sheep are now slaughtered in wholesale packing and slaughtering establishments, and only the balance are killed in retail establishments or upon the farms or ranges.[1]

Shipments into St. Paul

A graphic representation of the concentration of live-stock shipments at a particular market is reproduced from the records of local live-stock shipping associations in the State of Minnesota, as of the year 1919.

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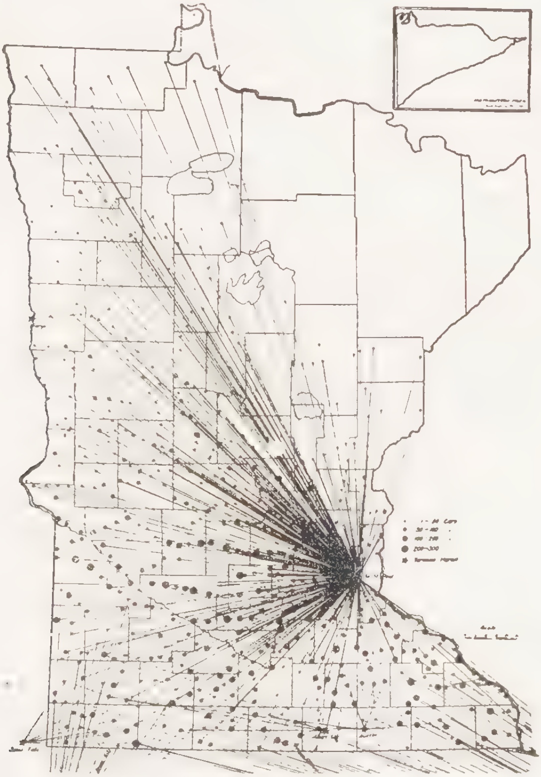
[1] United States Department of Agriculture, *Yearbook*, 1925. The census last collected figures on retail and farm slaughter in 1909. Since that time the percentage of animals slaughtered in wholesale establishments at central markets has probably increased.

Live-stock Receipts at Terminals Maintained by the National Live-Stock Producers' Association, 1925

More comprehensive figures showing live-stock receipts at principal terminal markets were published in the annual report of the National Live-Stock Producers' Association for 1925. This association operates so-called "producers' terminals" at large market centers to handle shipments of members. In 1925 the markets where terminals of this sort were maintained handled 50 per cent of the number of head of live-stock received in central markets of the United States. The terminals themselves handled the very considerable number of 67,575 cars, received from twenty-nine states



LIVE-STOCK SHIPMENTS BY MINNESOTA SHIPPING ASSOCIATIONS[1] and Canada, or about 9 per cent of all cars of live-stock sold. The following map shows the location of producers' offices, with lines radiating to the states from which shipments originated:

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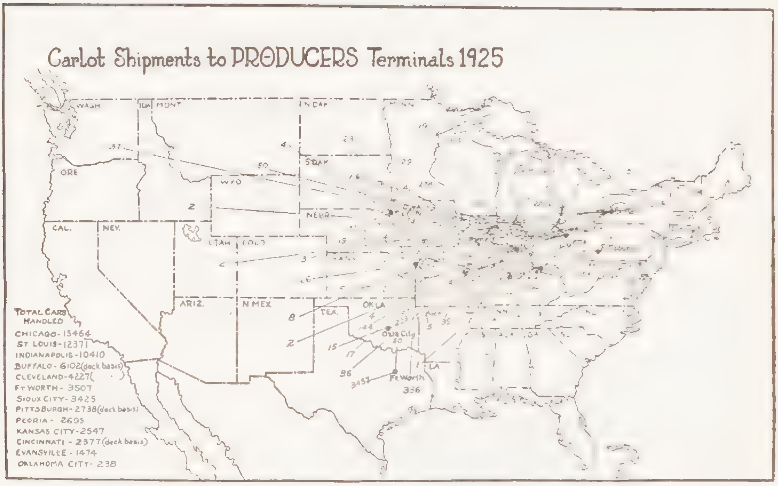
[1] University of Minnesota, Agricultural Experiment Station, Bulletin No. 201, "Organization and Management of Local Live-stock Shipping Associations in Minnesota," December, 1922.



CARLOT SHIPMENTS OF LIVE-STOCK TO PRODUCERS' TERMINALS, 1925

In the diagram reproduced above, the lines show the source from which each producers' terminal obtained its supplies, and the figures indicate the number of cars shipped to each designated terminal from the state from which the line is drawn.[1]

Marketing of Wyoming Sheep

Still further indication of live-stock movements may be derived from analysis of the market destinations of the live-stock produced in different states. For this purpose the reader's attention is directed to a few out of a series of charts prepared by the commercial research department of Swift & Company.

The first chart upon the following page shows the principal markets for Wyoming sheep in 1918.

Most Wyoming sheep are marketed at Omaha, with lesser amounts at Chicago, Denver, Kansas City, Sioux City, and St. Joseph. Much the same distribution occurs in the case of cattle, though statistics for cattle are not indicated upon the chart.

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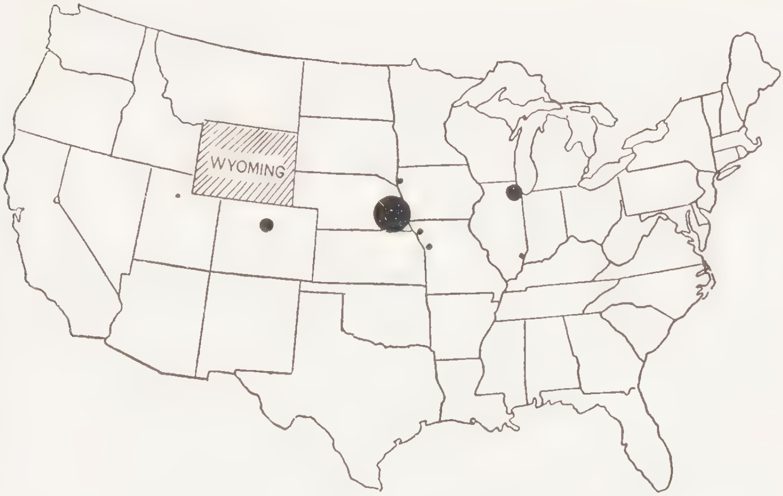
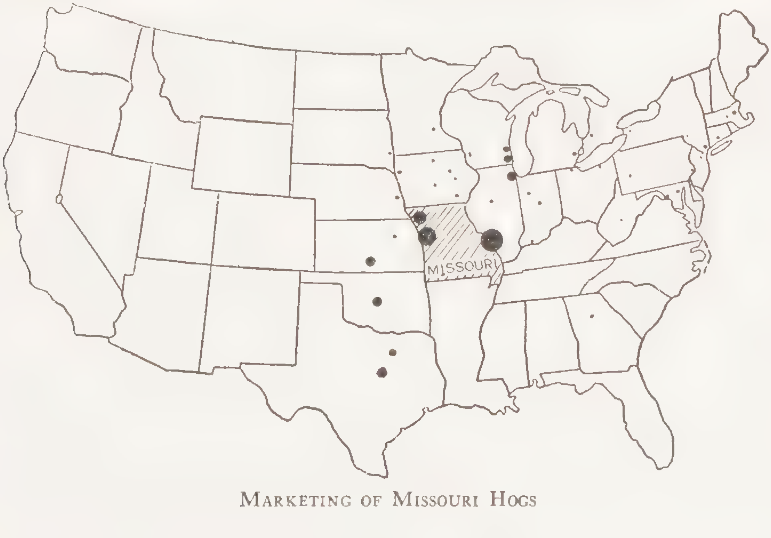
[1] National Live Stock Producers' Association, Report, 1925, p. 115.



MARKETING OF WYOMING SHEEP

Missouri Hogs

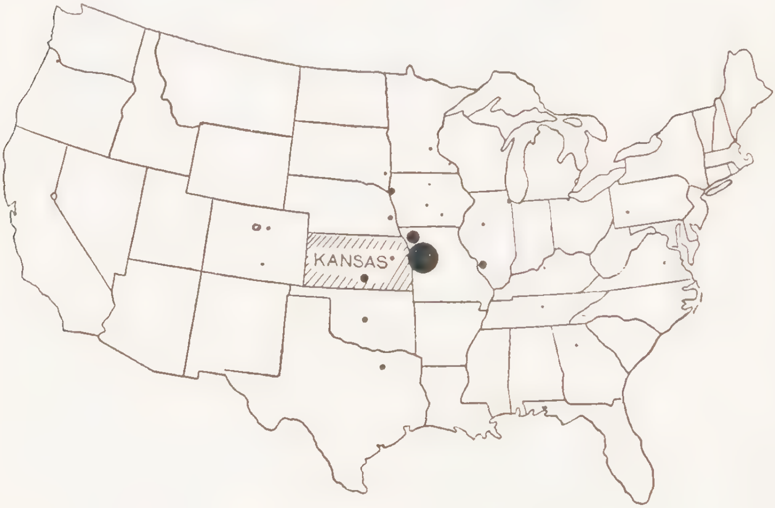
The next chart supplies similar information for Missouri hogs. Missouri hogs are shipped to St. Louis on the east, and to Kansas City and St. Joseph upon the west. Other markets of some importance are Chicago, Wichita, Milwaukee, Wisconsin, and Oklahoma City. These last named points occupy, however, a distinctly minor position in the trade.



MARKETING OF MISSOURI HOGS

Kansas Cattle

A third chart indicates the markets for cattle produced in the State of Kansas.



Marketing of Kansas Cattle

Kansas cattle are shipped predominantly to Kansas City. Among other secondary centers may be mentioned St. Joseph, Wichita, and St. Louis.

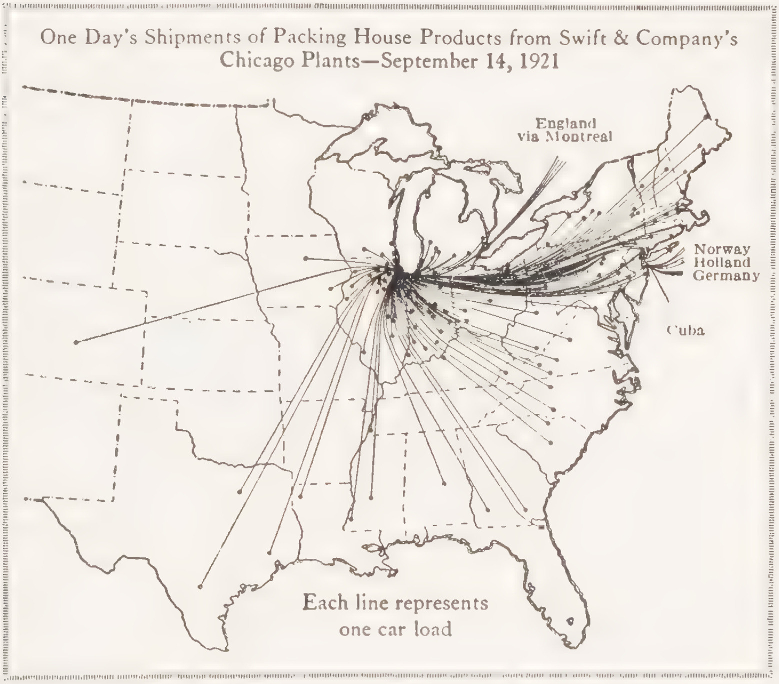
Direction of Movement of Meat Products

Inasmuch as the consumption of meat is largely a question of population, the general tendency of live stock is to move from west to east, along established rail routes. This same tendency continues in the case of meat products.

Most export trade in meat consists of hams and bacon, and the greater part of this traffic flows from the packing houses of the Middle West along the trunk-line route to New York City. Speed, regularity of shipment, and adequate refrigeration are easier to obtain by this route than by any other, while the frequency of sailings from New York is a distinct advantage.

Domestic shipments of meat are considerably more varied. The following diagram represents the shipments of packing-house products from the Chicago plant of Swift & Company on September 14, 1921.

On this day, Swift & Company shipped 182 carloads of packing-house products destined to twenty-nine states and five foreign countries. Most of the cars contained meat, but some had oleo oil, hides, wool, soap, grease, tankage, and fertilizer. The car that went to Colorado carried soap, as did also one of the cars to Texas. The two cars to Iowa carried fertilizer.[1]


One Day's Shipments of Packing House Products from Swift & Company's Chicago Plants—September 14, 1921
England via Montreal
Norway
Holland
Germany
Cuba
Each line represents one car load

Packing House Products Shipped from Swift and Company's Chicago Plants

Distribution of Trade Between Western Packing Centers

Geographical propinquity and differences in the character of the demand for meat in different sections of the country determine the volume of trade which particular Western packing centers are able to build up in particular districts. Fort Worth and Oklahoma City supply very little meat for the country directly east of the Ohio border. This section draws upon the Missouri River markets—Kansas City, St. Joseph, Omaha, and Sioux City—and upon St. Louis and Chicago. On the other hand, Fort Worth and Oklahoma

[1] Swift & Company, *Yearbook*, 1922.

City can market in the Southeastern states to much better advantage than the river markets, in part perhaps because of location, and in part because they have a product suited to the demand. Pork products sold in the Northwest come from St. Paul, Denver, Spokane, Portland, and Seattle, while in the Southwest the distributing centers are Fort Worth, Oklahoma City, Wichita, Pueblo, Denver, El Paso, and Los Angeles.[1]

Eastern v. Western Packing-houses

There has been in the past a question as to whether live-stock slaughtering and meat packing should be done in the East, as near as possible to the consuming market, or in the West, convenient to the source of live-stock supply. This is a matter that affects Western packing centers as a group as compared with Eastern centers such as Cincinnati or New York. Space does not permit extended discussion of the large problems of sectional rivalry involved in these alternatives. The decisive victory of the Western packers may be ascribed at least in large part to the depreciation in live stock when shipped long distances, to a relation between the railroad rates on live stock and rates on products which, on the whole, favors the latter, and to an extraordinary perfection of ventilating and refrigerating equipment, due mainly to the initiative and inventiveness of the packing industry itself, which has opened unexpected opportunities in the way of long-distance meat transportation.

Oranges and Lemons

Recent studies by the Department of Commerce depict the movements of perishable fruit and vegetables in the United States. Selections from charts prepared by the government on the subject are as follows:

Most of the consuming territory south of the Ohio River and east of the Mississippi River is supplied with oranges from Florida, and practically all of that west of the Missouri River is supplied from California. There is, however, active competition between California and Florida fruit in the states east of the Missouri and north of the Ohio and Potomac Rivers. This section is known as "blanket territory" because many railroad rates from the Pacific Coast to the described region are the same wherever the goods shipped are destined within the district. In the season of 1916-17,

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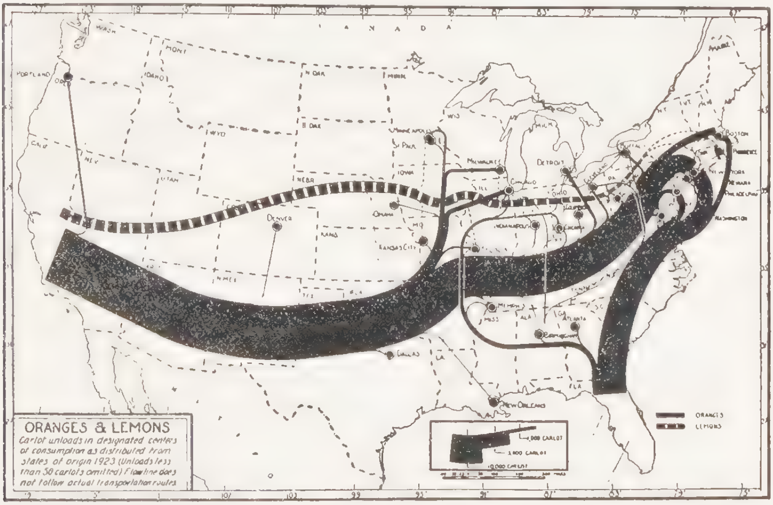
[1] University of Chicago, School of Commerce and Administration, *The Packing Industry*, 1924.

26,856 cars, or 90.6 per cent, of a total eastward movement of 29,626 cars of oranges forwarded by the California Fruit Exchange moved to blanket territory points.[1]

California oranges differ in some respects from Florida oranges, but not sufficiently so as to give either kind a marked advantage in competitive markets. Nor is there any great difference between the cost of raising fruit in the Southeast and the cost of production upon the Pacific coast. Either source of production has the capacity to supply the greater part of the consumption of the United States. It follows that the relative volume of shipments from California or from Florida, respectively, to points in the Northeast depends upon conditions of transportation, including matters such as speed of transit, adequacy of refrigeration, and, not least, the level of rates which the railroads charge.


CANADA
ORANGES & LEMONS
Carlot unloads in designated centers of consumption as distributed from states of origin 1923 (Unloads less than 50 carlots omitted) Flow line does not follow actual transportation routes
ORANGES
LEMONS
PORTLAND
DENVER
KANSAS CITY
OMAHA
CHICAGO
DETROIT
BOSTON
WASHINGTON
DALLAS
NEW ORLEANS
ATLANTA

ORANGE AND LEMON SHIPMENTS[2]

In 1925, the rates on oranges from Lakeland, an average shipping point in Florida, and from Los Angeles to a number of representative Eastern points were those printed on page 242.

Under this schedule of rates, California oranges were at a considerable disadvantage so far as rates were concerned in the case of shipments to the eastern seaboard, but at a less disadvantage in

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[1] California Citrus League v. Director General, 58 I. C. C. 373, 375, 1920.

[2] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, "Transportation of Pacific Coast perishables," by A. L. Cricher, 1924.

COMPARISON BETWEEN RATES ON ORANGES FROM LAKELAND, FLORIDA, AND FROM LOS ANGELES, CALIFORNIA, TO REPRESENTATIVE EASTERN POINTS[1]

	Lakeland, Florida		Los Angeles, California	
	Miles	Rate (Cents)	Miles	Rate (Cents)
New York, N. Y.	1,216	95.0	3,224	126.4
Boston, Mass.	1,445	102.0	3,283	126.4
Philadelphia, Pa.	1,125	92.0	3,080	124.0
Washington, D. C.	989	90.0	3,100	124.0
Buffalo, N. Y.	1,424	105.0	2,786	124.0
Cleveland, O.	1,447	105.0	2,603	124.0
Cincinnati, O.	1,158	89.0	2,543	124.0
Chicago, Ill.	1,264	105.0	2,246	124.0
St. Louis, Mo.	1,140	101.0	2,077	124.0
Kansas City, Mo.	1,348	119.0	1,795	124.0

the case of shipments to points further west. Any reduction, however, in the rate from Los Angeles, say, to Buffalo, or to New York City, tended to increase the volume of oranges moving from west to east by enabling California shippers to increase their sales in these competitive markets, while any increase in such rates improved the position of Florida growers and enlarged the fruit movement over Southern carriers. The railroad companies which connected the State of Florida and the City of New York were therefore in active competition with the companies which united southern California and New York, although one route ran north and south and the other east and west, and although the extremities of the two routes were more than two thousand miles apart.

Peaches

California and Georgia grow peaches, and the residents of the Northeastern and North Central states are the chief consumers. This we have already seen in Chapter IX. More exactly, twenty-seven consumption centers accounted for 13,532 car lot unloads of peaches in 1923, of which number approximately 12½ per cent were from California and about 45 per cent were from Georgia. The reason for this variance in percentages, which are in obverse order as compared with production in the two states, is to be found in the large amount of California peaches which are canned within the state. Peaches are an especially perishable commodity, and it is to the advantage of the California producer to market his goods in staple canned varieties rather than to risk transcontinental movement.

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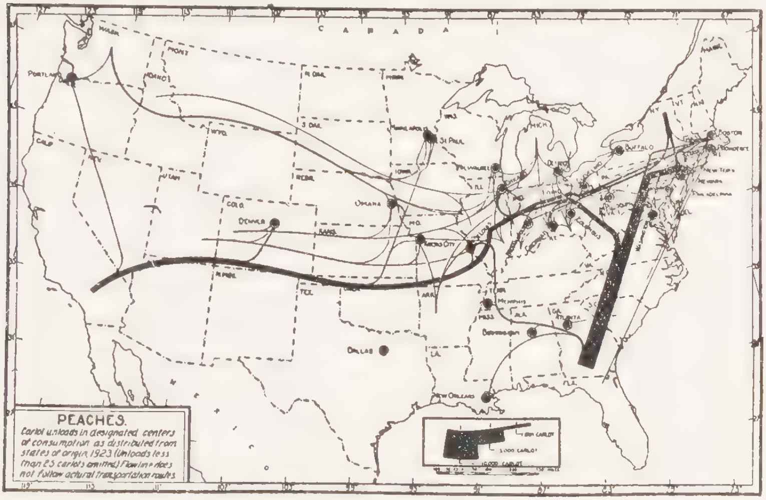
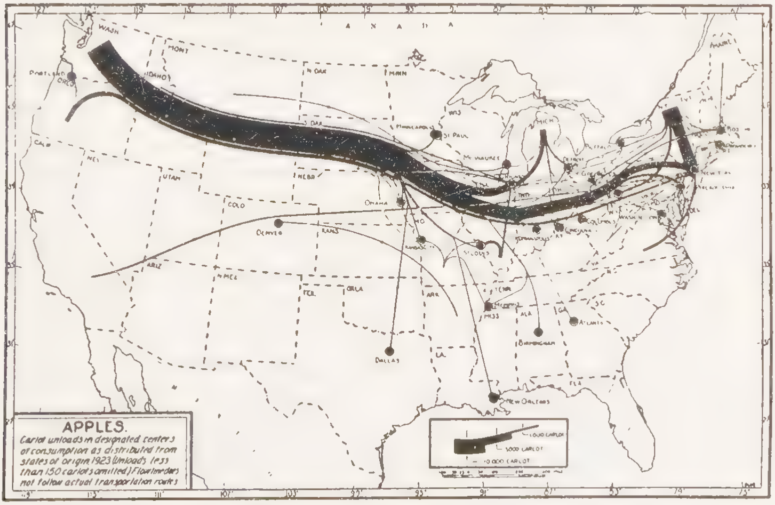
[1] Bureau of Railway Economics, Bulletin No. 10, "Commodity prices in their relation to transportation costs, Oranges," November, 1925.



PEACH SHIPMENTS[1]

Apples

Apples grow best in Northern states. The largest producers are Washington, Oregon, and California; the largest consumers the cities of New York, Chicago, Philadelphia, Boston, and Pittsburgh.



APPLE SHIPMENTS[2]

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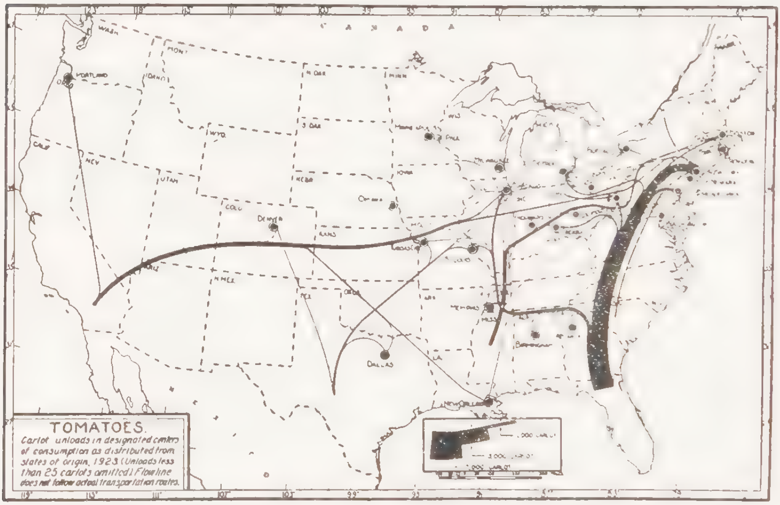
[1] Report on transportation of Pacific-coast perishables, *sup. cit.*

[2] *Ibid.*

Tomatoes

Florida, Mississippi, and California are the largest tomato-producing states. The principal consumers are the cities, in the main the same cities that absorb the apple crop.


CANADA
WASH
MONT
IDAHO
PORTLAND
ORE
N DAK
MINN
S DAK
WYO
CALIF
NEV
UTAH
NEBR
IOWA
COLO
DENVER
KANS
N MEX
OKLA
DALLAS
NEW ORLEANS
TOMATOES.
Carlot unloads in designated centers of consumption as distributed from states of origin, 1923 (Unloads less than 25 carlots omitted) Flow line does not follow actual transportation routes.
119°
115°
111°
107°
103°
99°
95°

Tomato Shipments[1]

Refrigeration

Generally speaking, the development of long-distance transportation of fruit and vegetables is due to the perfection of refrigerating railroad equipment and to the expedited service which railroads have been able to provide for this class of traffic. Fruit and dressed meat resemble each other in their liability to deterioration, and in the special attention which they therefore require.

The amount of refrigeration necessary is different in the case of different kinds of fruit, but most kinds of perishable freight make use of what are known as insulated or refrigerator cars. The ordinary refrigerator car has two ice bunkers or tanks, one at either end, built the full depth of the car and separated from the loading space by bulkheads. When filled with ice, these bunkers reduce the car temperature to an extent that aids effectively in the preservation of its contents. "Brine tank" cars, equipped with metal cylindrical tanks at each end, filled with a mixture of crushed ice and salt, are also used. This special apparatus produces quicker and more intense cold, and serves especially in the transportation of fresh meats and packing-house products. The insulated car has no tanks, but walls, ceilings, and doors are so constructed as to be relatively impervious to heat or cold.[1]

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[1] *Ibid.*

Ownership of Refrigerator Cars

Refrigerator cars were invented in the United States in the 'sixties, for the carriage of fresh meat. The first cars were built by shippers because railroads were unwilling to invest the necessary money in what they regarded as an experiment, and for many years shippers who desired this type of equipment were compelled to build their own rolling stock or to rely upon private car lines such as those of the Swift and Armour companies, controlled by meat packers with headquarters at Chicago. At a later date railroads entered the field, and now dominate it. On January 1, 1913, 103,508 refrigerator cars were in use in the United States, of which 48,926 were owned by railroads.[2] Of the remainder, a substantial number of cars were owned by fast freight lines controlled by railroads or by groups of railroads; such as the Pacific Fruit Express, owned jointly by the Union Pacific and Southern Pacific systems; the Santa Fé Refrigerator Despatch Company, owned by the Atchison, Topeka and Santa Fé Railway Company; the American Refrigerator Transit Company, owned by the Missouri Pacific and the Wabash; and the Chicago, New York, and Boston Refrigerator Company, owned by the Grand Trunk Railway system. The Fruit Growers' Express, controlled by the stockholders of Armour & Company, is the only company furnishing refrigerator service which is not under railroad control. Armour & Company is also the most important shipper supplying refrigerator cars for the carriage of its own products, in this case meat and meat products.[3] Since 1913, the number of refrigerator cars has increased, although exact figures are not available.

Payment for the Use of Cars

A shipper who uses a refrigerator car pays usually a stated charge for protective service in addition to the freight rate, or, in some instances, he may pay on the basis of cost of ice furnished. The railroad retains these payments if it is the owner of the car; if the car is owned by a shipper the railroad collects the freight rate and refrigerator charge, and pays the owner an agreed sum per mile for the use of the equipment. If the car is owned by a private car line, the railroad receives the freight rate and payment by the car line for the ice which it furnishes; the car line takes the refrigeration charge from the shipper and the agreed sum per mile from the railroad for the use of its cars. Special contracts between the railroad and the car line or owner may expand upon or qualify these basic arrangements, as well as specify the respective liability of the parties for repairs, establish the right of the carrier to inspection, or require the owner to provide storage facilities when his cars are not in use.[1]

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[1] Perishable Freight Investigation, 56 I. C. C. 449, 1920.

[2] In the Matter of Private Cars, 50 I. C. C. 652, 659, 1918.

[3] In the Matter of Private Cars, 50 I. C. C. 652, 659–660, 1918; Perishable Freight Investigation, 56 I. C. C. 449, 455, 1920.

Transportation in refrigerator cars has been considered by the Interstate Commerce Commission on several occasions, and the use of private car lines in the packing industry was the occasion of a severely critical report by the Federal Trade Commission in 1919.[2] Refrigerator charges may sometimes be too high and the use of privately owned cars may lead, on occasion, to undesirable results; there is no doubt, however, but that the development of efficient refrigeration has alone made possible a large part of the fruit and meat transportation with which this chapter is concerned.

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Huebner, Grover G., and Johnson, Emory R., *The Railroad Freight Service.* New York, Appleton, 1926.

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Swift & Company, *Yearbook*, 1922.

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[1] Huebner and Johnson, "The Railroad Freight Service," 1926, pp. 132–133; In the Matter of Private Cars, 50 I. C. C. 652, 696, 1918.

[2] Report of the Federal Trade Commission on private car lines, June 27, 1919.

United States Department of Commerce, Bureau of Foreign and Domestic Commerce, *Transportation of Pacific Coast Perishables*, by A. Lane Cricher. Washington, Government Printing Office, 1924.

United States, Federal Trade Commission, "Report on the Wholesale Marketing of Food." Washington, Government Printing Office, 1920.

United States Interstate Commerce Commission, Perishable Freight Investigation, 56 I. C. C. 449, 1920.

CHAPTER XIV

COMMODITY MOVEMENTS—LUMBER, COTTON, AND SUGAR

Lumber

The character and direction of lumber shipments have greatly changed in the course of the last century. Short hauls from Maine to Boston (225 miles), from the upper Hudson to New York City (200 miles), and the Pennsylvania river traffic to Philadelphia illustrate the nature of lumber movements up to the time of the Civil War.

When the pine of the Lake states came to be drawn upon, the average length of haul increased. The Department of Agriculture points out that prior to 1860 a lumber haul of 500 miles was exceptional, and even half this distance much above the average; but a large part of the Lake states cut, even to Middle Western markets, moved more than 500 miles, and New York is 1,000 miles by water from Saginaw, one of the nearest points of manufacture in the Lake states territory.

Beginning of Southern and Western shipments

Southern pine shipments began on the Atlantic coast after the Civil War, but were small in volume by rail to the interior until after 1890. Water distances ranged from a minimum of 300 miles from Norfolk to Philadelphia to 2,000 or more from Gulf ports to Boston. Aside from purely local markets, the distances by rail were ordinarily in excess of 750 miles, and frequently exceeded 1,000 miles, as illustrated by the distances from Hattiesburg, Mississippi, to Boston of more than 1,000 miles, or to Pittsburgh of 1,100 miles.

Finally, the lumber cut from the Pacific coast moved the greatest distances of all. By water Puget Sound is nearly 7,000 miles from New York. By rail Omaha is nearly 2,000 miles from Portland, Oregon; Chicago is 2,300 miles, and New York is 3,200 miles.[1]

Consuming and Producing States

The accompanying map on page 249 distinguishes, for the year 1920, the states producing more lumber than they consumed from the states consuming more lumber than they produced.

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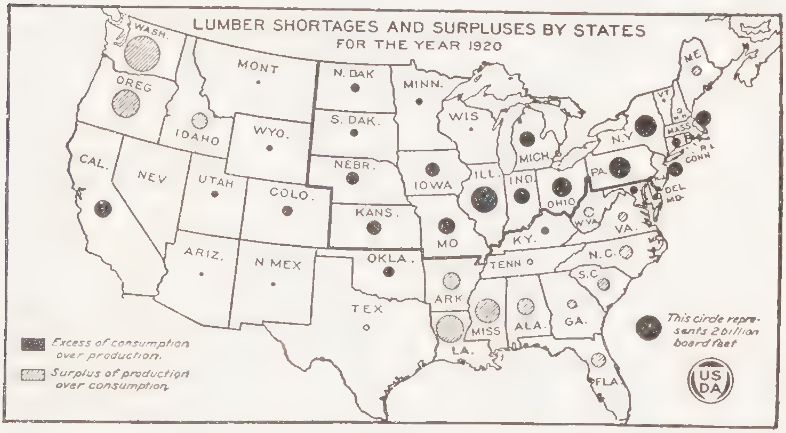
[1] United States Department of Agriculture, *Yearbook*, 1922.

From this map, as well as from the information presented in Chapters IX and XI, it is clear that the direction of lumber movement is eastward from the Pacific coast, and northward from the Southern states to the treeless plains of the central and northern Mississippi Valley and to the industrial districts of the North and Northeast.



Lumber Shortages and Surpluses by States

Proportion of Consumption in Different States

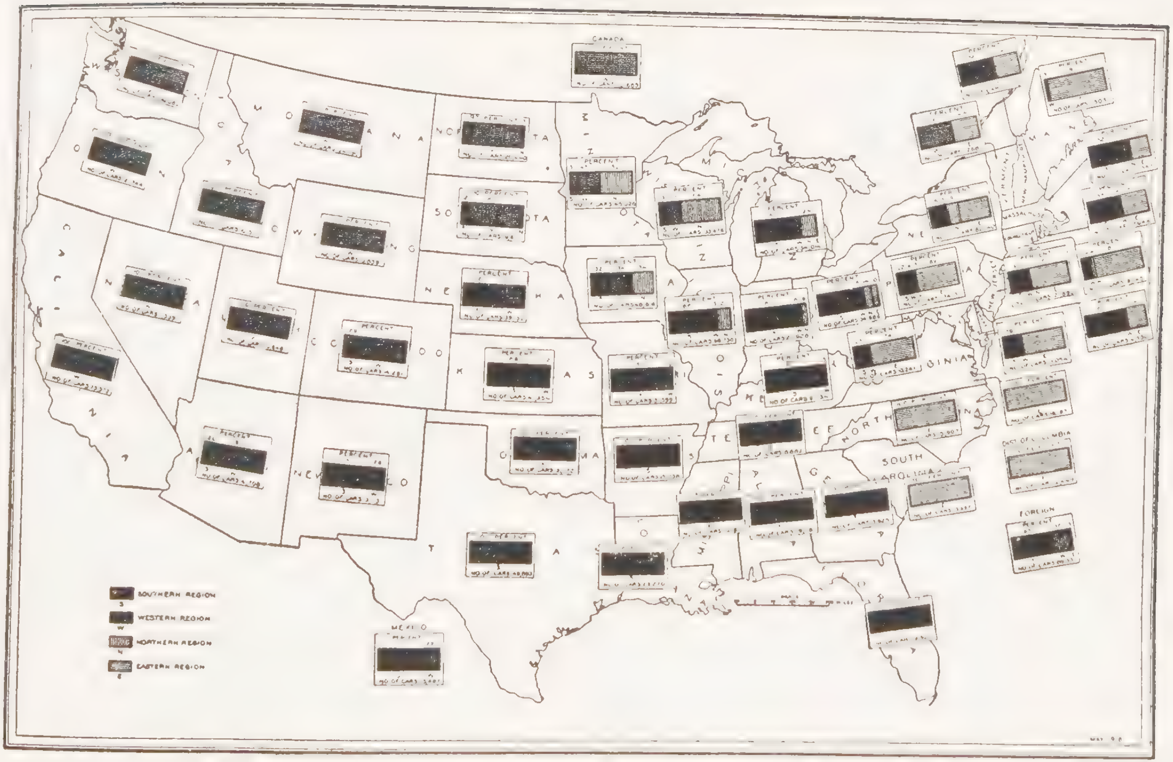
To supplement the foregoing diagram, it is necessary to show the proportion of consumption in different states supplied by Southern, Eastern, and Western lumber, respectively. This proportion may be explained both graphically and in tabular form.

Graphically, the sources of lumber consumed in the several states are represented upon the chart on page 250.

The black areas in the foregoing chart indicate the percentage of lumber consumed in each state which is supplied from Southern forests. The cross-hatched areas show the percentage supplied from Western, and the shaded areas that supplied from Northern and Eastern forests, respectively.

The same information graphically presented in the chart may be stated in tabular form on page 251.

In Nebraska the market is nearly evenly divided between Western and Southern lumber. In Iowa the proportion of Western lumber falls to approximately one-third, and in Illinois to one-eighth, of the total supply consumed. Southern lumber supplies 90 per cent



Distribution of Lumber from Principal Producing Regions, by States[1]

[1] United States Department of Agriculture, Report No. 114, "Some public and economic aspects of the lumber industry," by William B. Greeley, Assistant Forester, 1917.

DISTRIBUTION OF LUMBER FROM PRINCIPAL PRODUCING REGIONS, BY STATES

	Percentage of lumber consumed which comes from			
State	Western district	Southern district	Northern district	Eastern district
North Dakota	97		3	
South Dakota	87	12	1	
Arizona	80	20		
Colorado	71	29		
Vermont	56			44
Minnesota	45	3	52	
Nebraska	44	56		
Iowa	34	32	34	
New Mexico	26	74		
Wisconsin	23	13	64	
Massachusetts	14	52	1	33
Illinois	13	66	21	
Kansas	12	88		
Michigan	11	64	24	1
Missouri	10	90		
Indiana	6	85	9	
Ohio	6	70	14	10
New York	5	25	19	51
New Hampshire	4	56		40
Rhode Island	4	54		42
Pennsylvania	4	22	5	69
Connecticut	4	11	4	81
New Jersey	2	30	1	67
Delaware	1	65		34
Maryland	1	29		70
Virginia	1	25		74

of the market in Missouri, 56 per cent in Nebraska, 12 per cent in South Dakota, and 3 per cent in Minnesota. Northern lumber constitutes 64 per cent of the lumber consumed in Wisconsin, but only 21 per cent of that used in Illinois and 9 per cent of that used in Indiana. The farther lumber moves from the place of its production, the more difficulty do shippers find in meeting competition; and the nearer home lumber is sold, the more easily it can supply the greater part of the demand.

Importance of Railroad Rate Adjustments

Competition, of course, affects the price which railroads can charge for the transportation of lumber, as well as the price received by the shipper for his product. Put another way, the transportation charge is one of the factors which determine the boundaries of the territory within which the product of any district can be marketed.

The average railroad rate on No. 1 dimension Douglas (Western) fir, selling in Minneapolis for $27.35 per thousand feet, was, in 1916, $11.70, or nearly 43 per cent of the selling price. The average rate on No. 2 yellow (Southern) pine boards, selling in Chicago for $22.25 per thousand feet, was $6.25, or 28 per cent of the selling price.[1]

If the Minneapolis rate on fir from Oregon to Minneapolis had been reduced, in 1916, to $11, Western shippers would have pushed their sales more vigorously, with the probable effect of enlarging the proportion of Western lumber sold in Minnesota, of extending the sales of Western lumber toward the east and south, and of increasing the volume of lumber transported over Western lines. If, on the other hand, the fir rate of $11.70 had been maintained, but the rate on pine boards from Southern points had been cut from $6.25 to $5.50, the selling area of Southern pine would have been extended north and west, the volume of lumber transported over Southern lines would have been increased, and that transported over Western lines would have been reduced.

Western and Southern Railroad Rates

Conflicts of interests between producing centers of this general type have frequently been brought to the Interstate Commerce Commission, and have been by no means easy to determine.

On the Western end lumber producing points are classified in great groups, of which the most important are the North Pacific Coast group, the Spokane group, and the California Coast groups. Rates from any point in a group are the same as from any other point in the same group, while the group rates in turn bear a certain relation one to the other. On the east points of destination are also arranged in large groups, designated by letters. Rates to any point in a destination group are the same as to any other point in that group, while the great distances involved bring it about that the rate of progression in the charge from group to group is slight.[2]

On the other hand, rates from the Southern and Southeastern states vary according to individual points of origin and destination. They are less absolutely than the rates from the Pacific coast, but more per mile, and they increase rapidly as the indicated points of destination move north or east. These two systems involve different principles of rate-making; their effect is, on the whole, to enlarge the territory within which Western and Southern lumber effectively competes.[1]

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[1] United States Department of Agriculture, Report No. 114, *sup. cit.*, p. 41.

[2] West Coast Lumbermen's Association *v.* A. & S. Ry. Co., 78 I. C. C. 746, 1923; Lumber from California to Minnesota and Wisconsin, 80 I. C. C. 595, 1923.

Cotton

The first movement of cotton is by wagon from the farm to the gin and from the gin, after the cotton seed has been separated from the lint, to some convenient local market where the farmer sells his loose bales to country merchants, street buyers, or other types of retail purchasers.

Compression and Concentration

The next step in the marketing process is the sale of the cotton by the local dealer to a wholesaler and its shipment to a concentration point. Most cotton at this stage is shipped on what is known as carrier's privilege rates, which means that the carrier has the privilege of compressing at its own expense. A bale of loose cotton measures approximately 54 by 50 by 27 inches, and weighs, on the average, 500 pounds,[2] while a bale of standard density measures approximately 59 by 23 by 21 inches or 56 by 28 by 18 inches. There is thus a considerable saving in space through compression, which is of advantage to the carrier by either land or sea, and explains its willingness to encourage the process.[3]

If cotton is shipped on carrier's privilege rates it may be stopped again by the shipper to be sampled, graded, classified, further compressed, and perhaps stored awaiting sale; or if originally forwarded with shipper's responsibility for compression, these processes may take place at the original compress points. In either case, the route that the cotton now follows depends upon whether it is intended for domestic consumption or for export.

Export Movement

About one-half of the cotton compressed is exported, and about one-half reserved for domestic consumption. Export cotton moves for the most part from compression points to Galveston or to New Orleans.

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[1] Water Competition Rates on Lumber, 60 I. C. C. 643, 1921; North Carolina Pine Association *v.* A. C. L. R. R. Co., 85 I. C. C. 270, 1923.

[2] Mississippi Railroad Commission *v.* A. & V. Ry. Co., 89 I. C. C. 47, 50, 1924. The amount paid by carriers for compression is 15 cents per 100 pounds.

[3] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Trade Information Bulletin No. 288, "Marketing Cotton for Export," by E. L. Tutt and W. R. Meadows, 1924.

EXPORTS OF COTTON FROM THE UNITED STATES, 1923 [1]

Customs Districts	In bales of 500 pounds	Per cent of total
Atlantic Coast		
New York	381,198	6.8
Virginia	214,950	3.8
North Carolina	101,262	1.7
South Carolina	138,528	2.4
Georgia	259,002	4.7
Gulf Coast		
Galveston	3,285,802	60.0
New Orleans	685,240	12.5
Mobile	30,156	.5
Pacific Coast		
Los Angeles	28,846	.5
San Francisco	80,984	1.5
Washington	54,852	1.0
Northern Border		
Michigan	104,336	1.8
All others	120,780	2.8
Total	5,485,936	100.0

Equalization of Railroad Rates

Railroad rates are so adjusted that equality is maintained between Galveston and New Orleans, even though in some cases the relationship between rates on cotton which is to be exported is different from the relationship between the rates upon cotton for domestic consumption. From Oklahoma City, for instance, the domestic rate to Galveston is 101 cents and that to New Orleans 105½ cents; the export rate to both cities is 105 cents. There is, however, no similar equalization between Gulf cities taken as a whole and the Atlantic seaboard.

Examination of this chart will show that the expense of shipping through New York is generally much greater than that of shipping through New Orleans, a fact which explains the direction which the flow of cotton takes.

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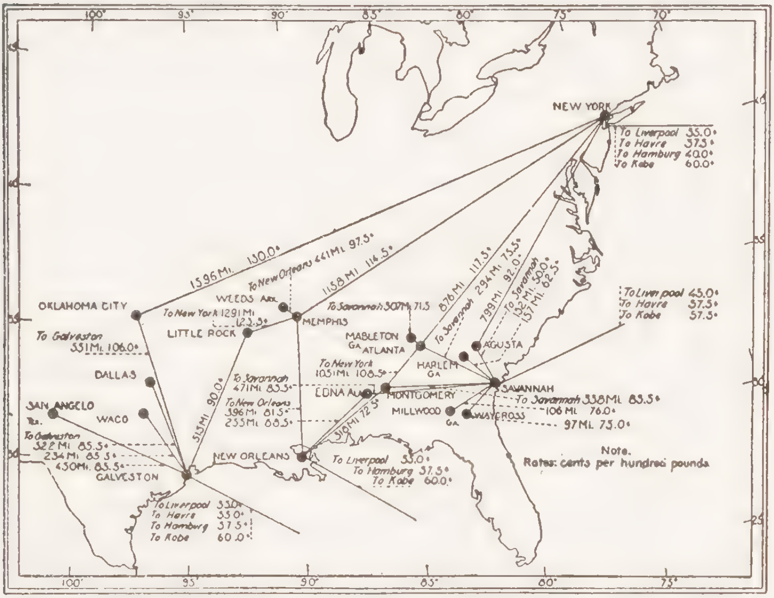
[1] United States Department of Commerce, Bureau of Foreign and Domestic Commerce "Transportation in Relation to the Export Trade in Agricultural Products," by Roland M. Kramer. Trade Information Bulletin No. 216, 1924. Figures reduced to bales of 500 pounds.



FREIGHT RATES ON EXPORT COTTON [1]

The following table states the transportation charges from specified points to Liverpool as of July 15, 1923:

TRANSPORTATION CHARGES ON COTTON FROM CERTAIN INLAND SHIPPING POINTS TO LIVERPOOL AS OF JULY 15, 1923

(In cents per 100 pounds)

Routes	Rail	Insurance	Ocean	Total
Via Galveston from—				
Little Rock, Ark.	90.0	31.0	55	176.0
Oklahoma City, Okla.	106.0	31.0	55	192.0
Via New Orleans from—				
Memphis, Tenn.	81.5	29.5	55	166.0
Montgomery, Ala.*	72.5	29.5	55	157.0
Via Savannah from—				
Augusta, Ga.	50.0	28.0	45	123.0
Waycross, Ga.	73.0	28.0	45	146.0
Atlanta, Ga.	75.5	28.0	45	148.5
Montgomery, Ala.	83.5	28.0	45	156.5

* If compressed to high density at New Orleans, add 6.5 penalty for second concentration.

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[1] *Ibid.*

Via New York from—				
Memphis, Tenn.	114.5	25.0	35	174.5
Little Rock, Ark.	123.5	25.0	35	183.5
Oklahoma City, Okla.	150.0	25.0	35	210.0
Atlanta, Ga.	117.5	25.0	35	177.5
Augusta, Ga.	92.0	25.0	35	152.0
Montgomery, Ala.	108.5	25.0	35	168.5

Length of Haul on Export Cotton

The Oklahoma Cotton Growers' Association estimates the average distance which Oklahoma cotton travels on the way to a port for export as 450 or 500 miles. The president of the New Orleans Cotton Exchange writes as follows:

> "It is difficult to arrive at an accurate approximate haul. Based upon knowledge of the principal territory of production in the various states, our opinion of the average haul on cotton running to New Orleans from the respective states is as follows:
>
> | State | Miles |
> |---|---|
> | Mississippi | 275 |
> | Louisiana | 275 |
> | Alabama | 300 |
> | Tennessee | 425 |
> | Arkansas | 475 |
> | Missouri | 500 |
> | Oklahoma | 625 |
> | Texas | 500" |

These distances are considerable, although less than in the case of grain.

Cotton for Domestic Consumption

Cotton intended for the use of domestic mills may, like export cotton, move by rail to seaboard points such as Galveston or New Orleans, where it is loaded aboard ship for transportation to New York, or it may be carried direct by rail to place of final destination. The destination of raw cotton is, of course, the cotton mill, for the commodity is not usable until it is spun and woven. Most cotton mills are located in New England or in the states south of the Ohio and Potomac Rivers and east of the Mississippi. Out of 6,193,417 bales of cotton consumed in 1925, including 275,932 bales of foreign cotton, 4,220,010 bales were spun in the cotton-growing states, 1,638,774 bales in New England, and 334,633 bales in all other states put together. This total of 6,193,417 bales was distributed among the more important states as follows:

CONSUMPTION OF DOMESTIC COTTON BY LEADING STATES, 1924–1925 [1]

State	Number of bales	Per cent
North Carolina	1,334,794	21.5
South Carolina	1,029,797	16.6
Georgia	966,324	15.6
Massachusetts	950,942	15.5
Alabama	430,051	6.9
Rhode Island	230,035	3.7
New Hampshire	205,326	3.3
All others	1,046,148	16.9
	6,193,417	100.0

Approximately one-fifth of all cotton consumed in the United States is spun in North Carolina, almost as much in South Carolina and in Georgia, and most of the balance in the four states of Massachusetts, Alabama, Rhode Island, and New Hampshire.

Location of Milling Centers

The map on page 258 shows the location of cotton-milling as well as that of cotton-producing sections in the United States.

This map, reproduced from one of a series of studies prepared by the Bureau of Railway Economics, indicates by solid black areas the counties having more than 100,000 producing cotton spindles in 1925. The concentration in consuming points is very notable, and this is made all the more striking from the transportation point of view by the fact that much of the cotton used by Southern mills travels only short distances to market, whereas almost all of the cotton spun in New England comes great distances and contributes proportionately more to the cotton movement with which we are here concerned.

Routes followed by Cotton Intended for Domestic Consumption

There are no statistics which show the flow of cotton with precision, but there is occasional information in testimony on exhibit in the files of the Interstate Commerce Commission. An example of

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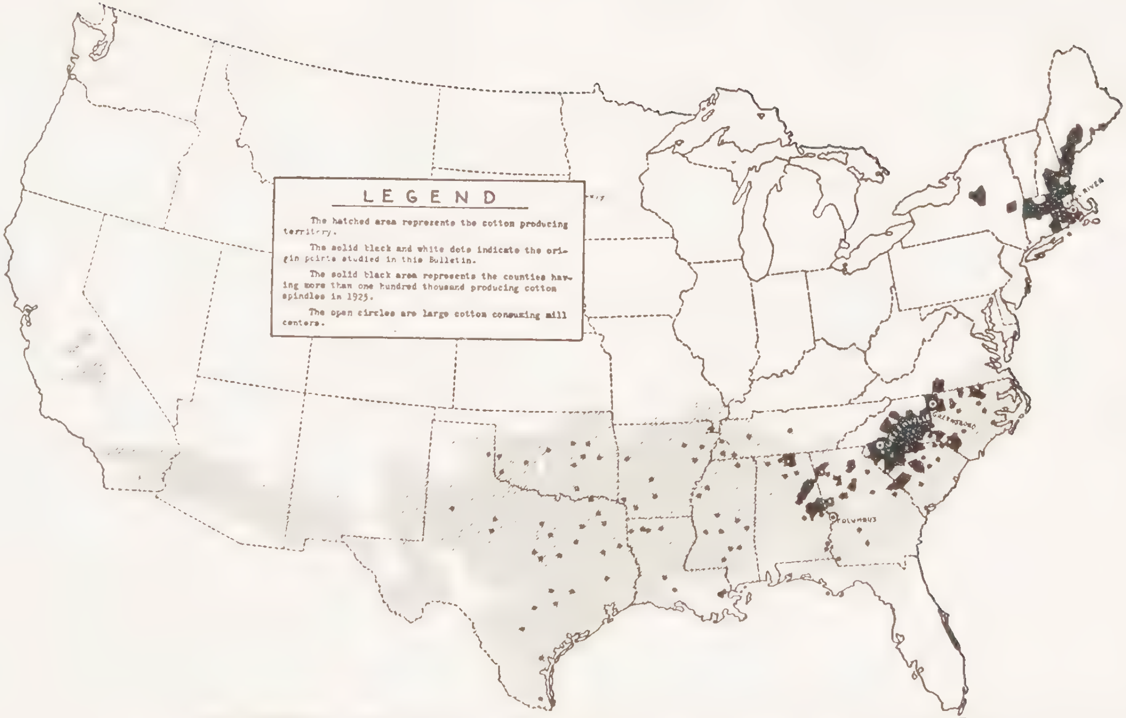
[1] United States Department of Commerce, Bureau of the Census, Bulletin No. 158, "Cotton Production and Consumption, Season of 1924–1925," Census figures relate to the twelve months ending July 31.


LEGEND
The hatched area represents the cotton producing territory.
The solid black and white dots indicate the origin points studied in this Bulletin.
The solid black area represents the counties having more than one hundred thousand producing cotton spindles in 1925.
The open circles are large cotton consuming mill centers.
GREENSBORO
COLUMBUS

MAP SHOWING LOCATION OF ORIGIN OR SHIPPING POINTS STUDIED, COTTON PRODUCING AND COTTON MILLING SECTIONS OF THE UNITED STATES

Cotton Producing and Cotton Milling Sections of the United States[1] this is evidence taken in 1922 that the Southern Railway handled 43,421 bales of cotton from Memphis during the shipping season of 1921-22. Of this quantity, 35,022 bales moved to the Southeast and to the Carolinas, 107 bales moved to the south Atlantic ports, 635 bales to the Ohio River crossways, central territory, and the Mississippi Valley, and the remainder was shipped to the East and to Virginia cities. Most of this cotton obviously passed on the main line of the Southern Railway through the city of Atlanta, or it traveled by way of Chattanooga, Bristol, eastern Tennessee, and Lynchburg to the Northeast. Of the cotton hauled by the Illinois Central during the same season from Mississippi Valley compress points, 32 per cent went to New Orleans and 51 per cent to the East. The southbound business of the Illinois Central could only have been carried over its own rails to New Orleans; the Eastern traffic might have followed several routes, but in all likelihood moved north as far as the Ohio River before it turned east.[1]

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[1] Bureau of Railway Economics, Bulletin No. 13, "Commodity Prices in Their Relation to Transportation Costs," May, 1926.

Generally speaking, cotton originating in the western portion of the cotton belt moves to Gulf seaboard cities and is there transshipped to coasting vessels. Cotton shipped from interior points east of the Mississippi River, on the other hand, naturally makes use of the New York-Atlanta route described in Chapter XI, or follows a combination of the Mississippi Valley and Trunk Line routes to destinations in the Northeast.

Sugar

From two-thirds to three-quarters of the sugar used in the United States is consumed in the household, the balance being taken by manufacturers of confectionery, soft drinks, bakery goods, condensed milk, canned and preserved goods, and miscellaneous minor products.[2] The distribution is, accordingly, highly general.

Production is, however, much more specialized. We have already indicated, in Chapter IX, the location of producing areas. Inasmuch as almost all of the cane sugar consumed in the United States is either imported or grown in the state of Louisiana, the principal points of origin for domestic cane-sugar movements are to be found in the refineries upon the Atlantic, Gulf, and Pacific seaboards. Of these, the most important are the refineries at or near the cities of

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[1] Cotton and Cotton Linters from Mississippi Valley Points, 69 I. C. C. 318, 1922.

[2] United States Federal Trade Commission, "Report on Sugar Supply and Prices, 1920," pp. 23–24, 71.

New York, Philadelphia, Baltimore, Boston, Savannah, New Orleans, Houston (Sugarland), and San Francisco.

In addition to the cane-sugar producers, there are manufacturers of beet sugar located in the Western and Middle Western states. In 1919 there were sixteen establishments for the manufacture of beet sugar each in Michigan and Utah, fourteen in Colorado, ten in California, eight in Idaho, five in Ohio, four each in Nebraska and Wisconsin, and one each in Illinois, Indiana, Iowa, Kansas, Minnesota, Montana, Washington, and Wyoming.[1]

The distribution of the beet-sugar factories is determined by the agricultural area devoted to the growing of sugar beets, because of the prohibitive cost of shipping this raw material. The manufactured product can, however, bear the cost of transportation, and does move long distances, where, as in the Rocky Mountain region, local supply far exceeds the consuming capacity of the neighboring population.

Division of Markets

Generally speaking, Cuban and Porto Rican sugar dominates the Eastern markets as far west as Buffalo and Pittsburgh.[2] On the other hand, the Western beet-sugar manufacturers, together with the refineries upon the Pacific coast, control the market as far east as the Mississippi River, while a substantial portion of the output of plants in Louisiana and Texas is marketed in the South and in the Southwest.

Competition of Producing Areas in the Northern Mississippi Valley

The transportation problem with respect to sugar resembles in several respects the lumber situation that has already been described. To a considerable extent, the country's needs are supplied by producers who are located upon the outside edges of the United States and who dispose of their surpluses in a common interior market. Thus the Atlantic seaboard refiners reach as far west as the Missouri River and the twin cities of Minneapolis and St. Paul. The Savannah and Louisiana refiners dispose of their product in Chicago. California interests produce far more than is necessary to supply the population of the Pacific coast states, and as they cannot reach into Utah, Idaho, and Colorado successfully because that part of the country is dominated by the local beet-sugar producers, they ship over the heads of their competitors into the Missouri River, Mississippi River, and Chicago markets, where they meet the Eastern and Southern refiners and the Utah, Idaho, and Colorado manufacturers.[1]

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[1] United States Congress, Senate, "Hearings before the Committee on Finance, on the proposed Tariff Act of 1921," vol. iv, p. 2329, testimony Rogers.

[2] United States Congress, Senate, "Hearings before the Committee on Finance on the proposed Tariff Act of 1921," vol. iv, p. 2193, testimony Rubino.

Prices of Refined Sugar

The basic price of refined cane sugar at all refining points is substantially the same, except that, in 1922, when the Interstate Commerce Commission last considered the sugar rate adjustment in a comprehensive way, the San Francisco price was slightly lower. At other than refining points, the price is generally the New York price plus the lowest freight rate *via* the standard all-rail lines from any Eastern refining point, or, in eleven Far Western states, the San Francisco price and the rates from that point. Beet-sugar prices follow those of cane sugar. Costs of production are not the same at all points, but at a given moment the ability of any refining district to enlarge, or even to maintain its distributing area, depends upon the relation of the railroad rate that it pays to the railroad rate of its competitors.

Railroad Rate Adjustment

The critical rates are: (1) from New York, Philadelphia, and Baltimore to Chicago; (2) from New Orleans to Chicago; and (3) from San Francisco to Chicago. Up to 1922 the New York rate was 56.5 cents and that from New Orleans 54 cents, for hauls in each case of approximately 900 miles. The rates from Baltimore and Philadelphia were 53.5 and 54.5 cents, respectively. This adjustment, the outcome of a somewhat complicated rate history, was disturbed in 1922 by the Eastern carriers, who received permission from the Interstate Commerce Commission to reduce their charges from New York to the New Orleans level of 54 cents.

The San Francisco rate was higher, but it is to be observed that, up to 1922, the rate from San Francisco to Chicago was less than from San Francisco to more Western points. Thus, the California rate upon a carload of 80,000 pounds was 88.5 cents per 100 pounds to Des Moines, Iowa; 83 cents to Davenport, Iowa; but only 79 cents to St. Louis and to Chicago. Sugar tariffs of this peculiar type were approved by the Interstate Commerce Commission in

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[1] Sugar Cases of 1922, 81 I. C. C. 448, 451, 1923.

1914,[1] and although they were finally disapproved as unnecessary and unwise, they afford convincing evidence of the severity of the competition in Middle Western sugar markets.

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[1] Fourth Section Violations in Rates on Sugar, 31 I. C. C. 511, 1914.

CHAPTER XV

COMPETITION OF ROUTES AND LOCAL DISCRIMINATION

Competition of Routes and of Localities

The use of routes and the movement of commodities over a great transportation system present industrial problems of the first order. This is because the direction which traffic takes affects not only the transportation units themselves, but also the development of particular producing centers and the prosperity of cities engaged in the work of distribution. Transportation and the location of industry are mutually dependent, while the location of industry in turn influences the lives of many millions of people. It makes a great deal of difference whether the lumber used in Iowa is grown in Alabama or in Washington, or whether Texas cotton is exported through Galveston or through New York, and the problems involved readily become matters of national concern.

Positive Character of Competition Between Routes

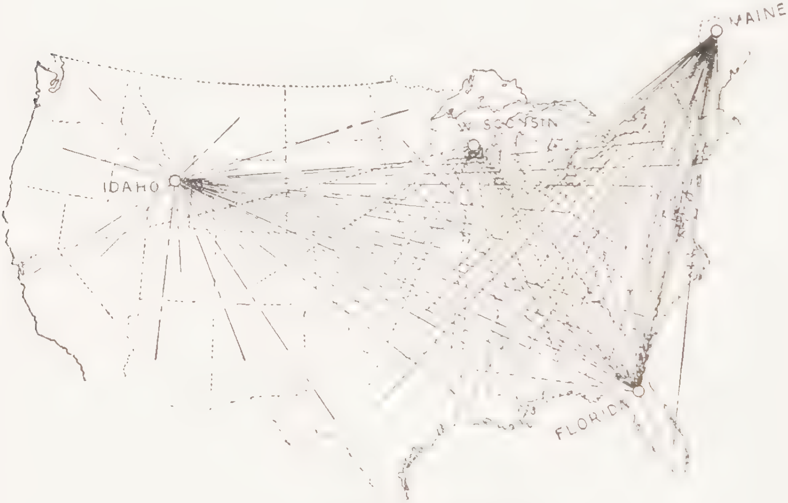
A route, in the transportation sense, is a combination of a highway and a transporting organization. In so far as shipments may move from a named point of origin to a named destination by two or more routes, then the organization responsible for the handling of traffic over one route competes with the organization responsible for the handling of traffic over the other route. If, for example, grain from Duluth to Buffalo, or coal from Erie to Chicago, can utilize either ships that ply upon the Lakes or railroads which connect Lake Erie ports with destinations in Minnesota and Illinois, then these routes compete directly. There is frequently competition of this sort, in spite of considerable differences in the length of rival highways.

Rivalry of Markets and of Producing Centers

There is, moreover, another manner in which routes compete. This is where several geographically remote producing centers seek to supply a single market, or where two or more markets seek access to a single source of supply. An excellent illustration of the second of these two types of competition is afforded by the shipment of packing-house products from Chicago to various destinations. Instances where several sources supply a single market occur in the case of Northwestern and Southern lumber competing in the Middle West or in California, and Florida fruit competing with California fruit in the states north of the Ohio River.

Competitive Shipments of Potatoes

Still another convenient example not previously described is afforded by the white potato. Potato shipments represent 34 per cent of the total annual rail shipments of all fruits and vegetables in the United States. They are grown in every state of the Union and move in carload quantities every day of the year.



Rail Distribution of Potatoes[1]

The map reproduced above pictures car-lot potato shipments from four states during the season 1924-25. The same markets are supplied from Maine, Wisconsin, Idaho, and Florida, so that an increase in the quantity forwarded from one state makes it more difficult for the products of the other states to find a sale. This is an instance of market competition analogous to the cases of lumber and of canned meats.

Meaning of the Phrase "Local Discrimination"

Differences of opinion as to what rates should be to or from competing markets are currently discussed under the name of "local discrimination." The complaint is usually voiced by some city and takes the form of a charge that the rates charged individuals in the complaining town are higher or the service rendered is poorer to some selected destination than the level of rates or the quality of service available to individuals in some other and competing locality.

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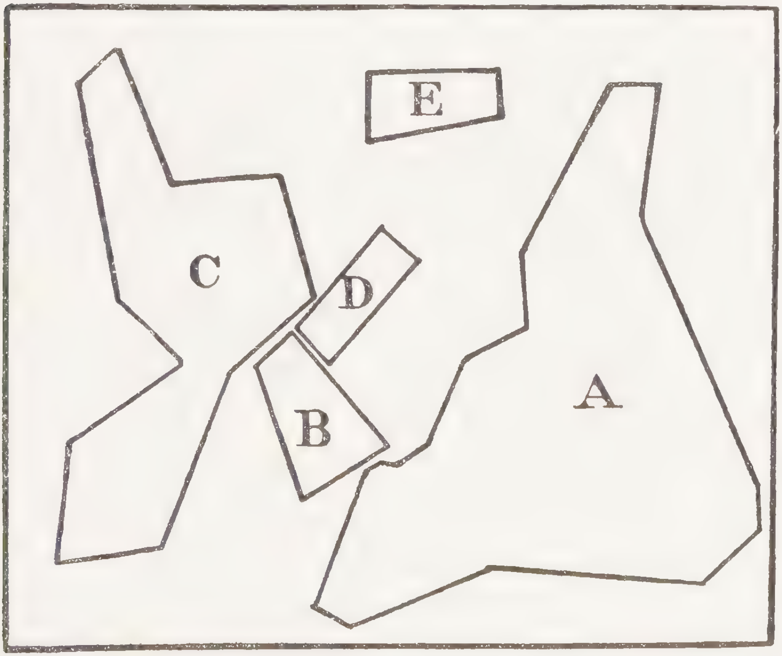
[1] Bureau of Railway Economics, Bulletin No. 12, "Commodity Prices in Their Relation to Transportation Costs," February, 1926.

Charges of local discrimination may involve large rate adjustments such as those on lumber or cotton or potatoes, or they may arise out of more limited situations.

Melcroft Coal Case

A simple illustration of alleged local discrimination is provided by the case of Melcroft Coal Company *v.* Indian Creek Valley Railway Company, decided in 1923.[1] This was a complaint of rates on coal from producing points in Pennsylvania to Eastern destinations. The producing points were grouped as designated in the above diagram.



Coal-producing Districts in Eastern Pennsylvania[1]

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[1] 81 I. C. C. 251, 1923. Cf. Rogers & Prinkey *v.* B. & O. R. R. Co., 30 I. C. C. 32, 1914.

In this diagram the letters A and B represent the so-called Meyersdale coal region, C the Connellsville area, and D and E, respectively, the Indian Creek and Ligonier fields. In the Melcroft case a corporation in the Indian Creek district complained that its rates to Eastern destinations were ten cents a ton higher than were the charges from mines in the Meyersdale district. The actual rates were $2.84 and $2.94 per ton.

There was no question of the reasonableness of charges either from the Indian Creek or from the Meyersdale districts, but only a dispute with regard to their relative adjustment. Stations in Indian Creek territory on the Baltimore and Ohio were twenty-two miles further from Baltimore than stations in the Meyersdale area. On the other hand, some stations that enjoyed Meyersdale rates were farther distant from Baltimore than was Indian Creek. The Meyersdale and the Indian Creek mines were in the same geologic area. They were in direct competition with each other. The Indian Creek production was comparatively small, and it found difficulty in keeping abreast of its larger neighbor. These were the general facts before the Interstate Commerce Commission in this case, and upon the showing so made it ruled that Indian Creek rates were relatively unreasonable and should be reduced to the Meyersdale basis.

Louisville v. Chattanooga

Another illustration of local discrimination was presented in 1923 by the complaint of a manufacturer of plumbing supplies located at Louisville, Kentucky. It was alleged at this time that the rates on plumbers' supplies to Eastern destinations were unduly high as compared with the rates from Chattanooga, Tennessee.

The rates attacked in the Louisville-Chattanooga case were as follows:

CARLOAD RATE ON ENAMELED-IRON PLUMBERS' SUPPLIES

From	To Virginia cities (Cents)	To Philadelphia (Cents)	To New York (Cents)
Chattanooga.........	42.5	54.0	57.0
Louisville			
Fourth class rate...	54.5	64.0	66.0
Fifth class rate.....	46.0	54.5	56.5

In spite of the fact that these rates were the center of complaint, no attempt was made to show that any of them were unreasonable *per se*. Complainant pointed out, however, that the short-line distances from Louisville and Chattanooga to destinations in the East were almost the same. Not only was this shown to be true, but it appeared that the generally higher level of rates in the South, and the fact that a large proportion of the haul from Chattanooga to the East was through Southern territory, brought it about that the class rates from Chattanooga were higher than those from Louisville. Originally the rates on plumbers' supplies were also higher, but this relation was changed by general rate increases both in official and in Southern territories in and following the year 1918, which affected the rates from Louisville more than those from Chattanooga. These rate increases actually brought the Louisville rates above those from Chattanooga.

So far as business conditions were concerned, complainant testified in the Chattanooga case that he sold supplies in the East in active competition with manufacturers at Chattanooga. To meet prices set by this competition, complainant was obliged to absorb freight charges to the extent that rates from Louisville to the East exceeded rates from Chattanooga. This was a handicap which Louisville producers were unwilling to bear.

"It clearly appears," said the Interstate Commerce Commission after reviewing these and other facts, "that the adjustment assailed is unduly prejudicial to complainant at Louisville, and unduly preferential of the manufacturer at Chattanooga." The Commission found that the rates at issue were not unreasonable, but that Louisville rates should not be higher than those from Chattanooga. It therefore issued an order requiring that these conclusions be made effective.[1]

Rates Intended to Prevent Movement

It is sometimes to the railroad's interest to prevent movement. This may be because the railroad is a consumer of the articles which it transports, and desires to maintain an abundant local supply by retarding shipment to distant markets,[2] or it may be because the retardation or prevention of movements from certain points tends to encourage traffic at other places. Railroads have sought, for instance, to protect producers whom they serve from the competition of competitors by raising their rates upon products which come to them from points of origin not situated upon their lines. Thus the

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[1] Standard Sanitary Manufacturing Co. *v.* A. & A. R. R. Corp., 80 I. C. C. 318, 1923.

[2] Scobell *v.* Kingston and Pembroke Railway Company, 3 Canadian Railway Cases 412, 1904. In this case the railroad raised the rates on cedar poles from five cents to ten and one-half cents because the railroad needed poles for its own use.

Missouri, Kansas, and Texas Railway once exacted an arbitrary of 5 cents per 100 pounds over and above its local rate on all traffic received from connections. The arbitrary was put in force for the purpose of enabling mills located upon the Missouri, Kansas, and Texas to sell to territory served by that line. The Missouri, Kansas, and Texas enjoyed the entire haul upon business that originated upon its line and was sold to local consumers, while it often obtained but a comparatively short haul upon traffic received from its connections.[1]

This was local discrimination because mills not located upon the Missouri, Kansas, and Texas paid relatively higher rates to a defined territory than did mills situated upon the lines of that particular railway company.

Again, carriers sometimes force traffic to move in one direction rather than in another, in order to increase their revenues. In a case before the Interstate Commerce Commission in 1907 [2] the Chicago, Burlington, and Quincy Railroad tried to compel Nebraska shippers to send their wheat East, instead of westward to Pacific coast terminals. It did this by insisting upon a very high rate of 75 cents per 100 pounds on westbound wheat. At a normal rate of 55 cents to Pacific coast terminals, the Burlington would have moved wheat 425 miles to Denver and there delivered the commodity to a connecting line. For its service it would have received a division of 11.88 cents. When the wheat was carried East, the Burlington carried the freight the entire distance to Chicago, 635 miles, and its earnings were 26.75 cents. Naturally the Burlington was opposed to westbound wheat shipments, and tried to reduce the movement by high rates in so far as might be possible. The Commission objected to the practice and required it to be discontinued.

Greater Charges for Shorter Than for Longer Hauls

There is one type of local discrimination which appears so frequently in discrimination cases that it requires a few words for itself. This is the case where a carrier charges more for a shorter than for a longer haul of the same or a like commodity over the same line and in the same direction. This class of discrimination gives rise to what are known as long and short haul, or Section 4, cases, from the terms of the section of the federal Act to regulate commerce in which they are mentioned.

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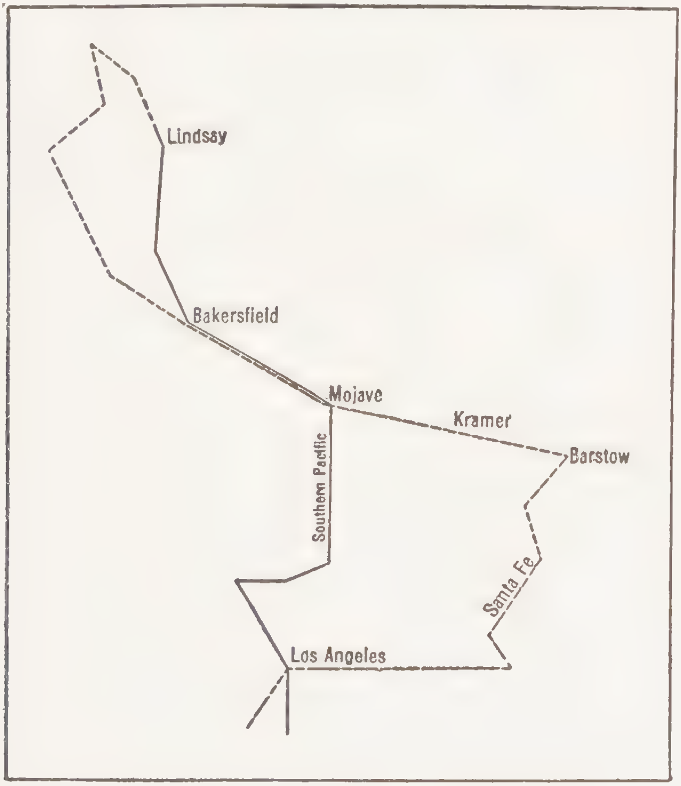
[1] Blackwell Milling & Elevator Co. *v.* M. K. & T. Co., 12 I. C. C. 23, 1907.

[2] A. J. Poor Co. *v.* C. B. & Q. Ry. Co., 12 I. C. C. 418, 1907.

Kramer v. Mojave, California

One of the simplest instances of a greater charge for a shorter than for a longer haul which has come to the attention of the writer is characteristic of a certain rate structure in the state of California. The territory in which the rates are quoted lies in the southern part of the state, while the relative position of the towns affected is set out in the following diagram:



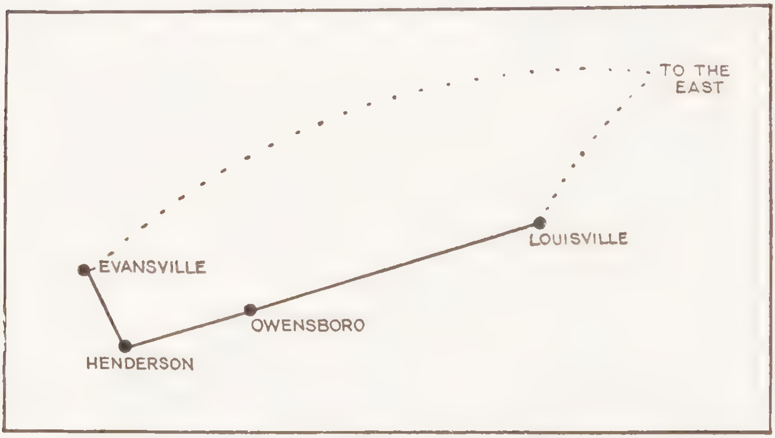
Freight Rates Between Los Angeles and Points North and East

In this case the distances from Los Angeles to the towns mentioned were, over the Atchison, Topeka, and Santa Fé Railroad, 174 miles to Kramer, 212 miles to Mojave, and 411 miles to Lindsay. The rates were 78 cents to Kramer, 52 cents to Mojave, and 70 cents to Lindsay. The rate to Kramer was a noncompetitive, local charge. The rate to Mojave over the Santa Fé was, on the other hand, depressed by the competition of the Southern Pacific Railroad. The fact that the haul to Mojave was longer than that to Kramer was not regarded as a conclusive reason against quoting a higher rate to this last-named place than to a destination 38 miles farther on.[1]

Owensboro v. Henderson, Kentucky

A slightly more complicated case of discrimination which illustrates the practice of charging a higher rate for a shorter than for a longer haul was recently reported from the state of Kentucky.

Owensboro, Kentucky, is situated a few miles south of the Ohio River, between Louisville, Kentucky, and Evansville, Indiana.



Owensboro v. Henderson

Owensboro lies, that is to say, between two cities, each of which may be reached at low cost by routes mostly operated through the industrial states of Indiana, Ohio, Pennsylvania, and New York, and each of which benefits from the active competition of two or more railroad lines. There is, on the other hand, but one line of railroad through Owensboro.

A not unnatural result of the presence of competition at Louisville and Evansville and its absence at Owensboro is that the railroad rates to the last-named town are relatively high. They are even high as compared with rates to Henderson, south of Evansville, but dependent upon it. From New York, for instance, the Owensboro rate in 1923 exceeded the rates to Henderson on Classes 1 and 6 in amounts of 10, 8, 5, 1.5, 2.5, and 1.5 cents, respectively. Meanwhile, traffic passing through Louisville from the East on its way to Henderson passed through Owensboro on its voyage to ultimate destination. This was a clear case of a greater charge for a shorter than for a longer haul.

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[1] Railroad Commission of California, vol. x, pp. 368 ff., 1916.

The distance from Louisville to Owensboro was 114 miles; that to Henderson, 144 miles. Generally speaking, traffic originating at or destined to points on the Louisville-Henderson line moved *via* Louisville when to or from points north and east of that gateway, and *via* Henderson and Evansville when to or from points north and west of that gateway.[1]

Owensboro complained, but without result. The Henderson rate proved to be upon too low a basis to be extended to all the towns upon the Louisville, Henderson, and St. Louis Railroad. Yet the Louisville-Henderson rate was the maximum possible to be charged at Henderson, for any increase would have driven shippers to use the Evansville gateway from the East. Why increase such a rate when the change would not affect the cost of laying down supplies either at Owensboro or at Henderson, but only the routing of traffic to these places? The case came before the Interstate Commerce Commission, but the Commission refused to act.

English Cases—Budd v. London and Northwestern

A third case, selected from English experience, is that of Budd *v.* London and Northwestern Railway Company.[2] This was an action brought by proprietors of iron and tinplate works at Ystalyfera, twelve miles distant from Swansea on the London and Northwestern Railway. The location of the works and the routes from the west coast of England to Liverpool are indicated upon page 272.

The Ystalyfera district adjoined the London and Northwestern Railway, and shipper's plant connected with the railroad by a siding. The rate from the Ystalyfera works to Liverpool was twelve shillings and sixpence per ton. Meanwhile, there were other iron and tinplate manufacturers, located near Swansea, who were charged only eleven shillings and fourpence per ton for the haul of their products to Liverpool. This lower rate was due to the competition of the sea route from Swansea to Liverpool, and the rate of eleven shillings and fourpence was fixed in order to enable the railroad to compete with the ocean line. Manufacturers at Ystalyfera could not use the ships and had, therefore, no way of escaping a higher charge. The facts were similar to those brought out in American cases, and the statute law which governed it was much the same.

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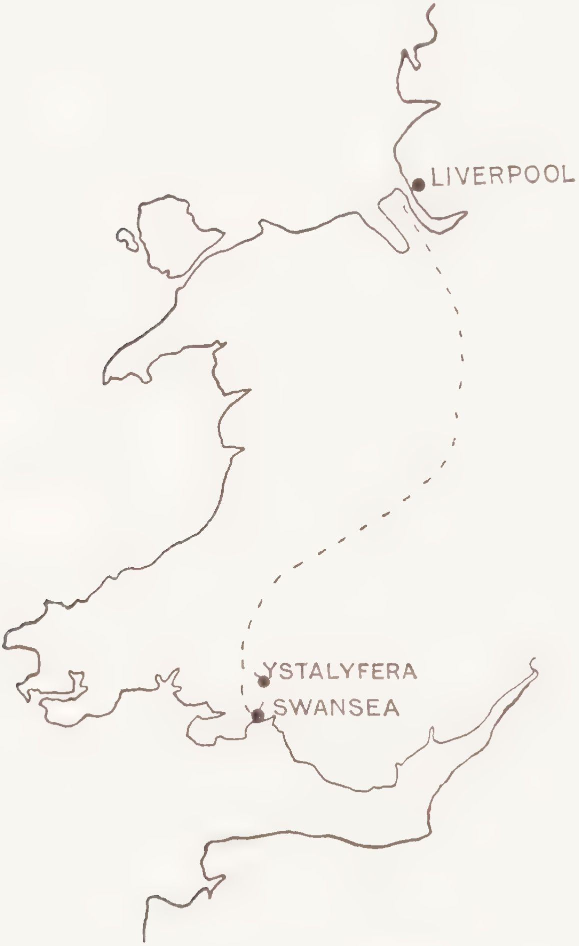
[1] Owensboro Chamber of Commerce *v.* L. H. & St. L. Ry. Co., 81 I. C. C. 145, 1923.

[2] 4 Railway and Canal Traffic Cases, 393, 1895.



Budd v. London and Northwestern

Statute Law in England Relative to Discrimination

In both England and the United States, what has been referred to as Section 4 rate-making is covered by those general sections of the countries' statute law which relate to discrimination.

In England, the law is to be found in sections of the Railway and Canal Traffic Acts of 1854 and 1888, reading as follows:

Act of 1854: "No (Railway Company or Canal Company, or Railway and Canal) Company shall make or give any undue or unreasonable Preference or Advantage to or in favour of any particular Person or Company, or any particular Description of Traffic, in any respect whatsoever, nor shall any such Company subject any particular Person or Company, or any particular Description of Traffic, to any undue or unreasonable Prejudice or Disadvantage in any respect whatsoever."[1]

Act of 1888: "Whenever it is shown that any railway company charge one trader or class of traders, or the traders in any district, lower tolls, rates, or charges for the same or similar merchandise, or lower tolls, rates, or charges for the same or similar services, than they charge to other traders, or classes of traders, or to the traders in another district, or make any difference in treatment in respect of any such trader or traders, the burden of proving that such lower charge or difference in treatment does not amount to an undue preference shall lie on the railway company.

"In deciding whether a lower charge or difference in treatment does or does not amount to an undue preference, the court having jurisdiction in the matter, or the Commissioners, as the case may be, may, so far as they think reasonable, in addition to any other considerations affecting the case, take into consideration whether such lower charge or difference in treatment is necessary for the purpose of securing in the interests of the public the traffic in respect of which it is made, and whether the inequality cannot be removed without unduly reducing the rates charged to the complainant: Provided that no railway company shall make, nor shall the court, or the Commissioners, sanction any difference in the tolls, rates, or charges made for, or any difference in the treatment of, home and foreign merchandise, in respect of the same or similar services.

"The court or the Commissioners shall have power to direct that no higher charge shall be made to any person for services in respect of merchandise carried over a less distance than is made to any other person for similar services in respect of the like description and quantity of merchandise carried over a greater distance on the same line of railway."[2]

A later section in the English Act of 1888 expressly approves group rates in principle, provided that the groups be not unreasonably wide.

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[1] 17 & 18 Victoria, 1854, Cap. 31.

[2] 51 & 52 Victoria 1888, Cap. 25.

Finally, the English Railways Act of 1921 directly provides for lower charges in some instances for longer than for shorter hauls by declaring that where two places are connected by routes belonging to or operated by two or more railway companies, the circuitous route may adopt the direct route's rate between these places. No route is to be regarded as circuitous which is not at least 30 per cent longer than the direct route between termini. On the other hand, if the circuitous route is more than 50 per cent longer than the direct route, special consent to meet the rate of the direct route must be obtained from the Rates Tribunal set up by the Railways Act.[1]

Section 3 of the Act to Regulate Commerce

In the United States, Section 3 of the Act to Regulate Commerce is applicable to all instances of local discrimination. This section contains the following language:

> "That it shall be unlawful for any common carrier subject to the provisions of this Act to make or give any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any particular description of traffic, in any respect whatsoever, or to subject any particular person, company, firm, corporation, or locality, or any particular description of traffic, to any undue or unreasonable prejudice or disadvantage in any respect whatsoever."

In this country, the statutory clauses dealing specifically with concessions on hauls to remote as compared with hauls to nearer destinations are to be found in Section 4 of the Act to Regulate Commerce. This section was incorporated in the original Act of 1887, and has twice been amended since that time.

Section 4 of the Act to Regulate Commerce

Section 4 of the federal Act of 1887 read, when first enacted, as follows:

> "That it shall be unlawful for any common carrier subject to the provisions of this act to charge or receive any greater compensation in the aggregate for the transportation of passengers or of like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line, in the same direction, the shorter

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[1] 11 and 12 George V 1921, Cap. 55.

> being included within the longer distance; but this shall not be construed as authorizing any common carrier within the terms of this act to charge and receive as great compensation for a shorter as for a longer distance: *Provided, however,* That upon application to the Commission appointed under the provisions of this act, such common carrier may, in special cases, after investigation by the Commission, be authorized to charge less for longer than for shorter distances for the transportation of passengers or property; and the Commission may from time to time prescribe the extent to which such designated common carrier may be relieved from the operation of this section of this act."[1]

This section, numbered 4, was introduced into the law in 1887 on the insistence of Judge Reagan of Texas. It forebade, it will be observed, charging a higher rate for a shorter than for a longer haul, but with certain exceptions that will presently be mentioned. The prohibition was the work of Judge Reagan; other people were responsible for the exceptions.

Judge Reagan felt, in 1887, that railroads would cut rates at competitive points, if not restrained, to a figure below cost, and would recoup themselves by advancing rates at stations where competition did not exist. His opponents argued that railroad competition at competitive centers was an advantage to the general public because it tended to reduce through rates. They also declared that other persons benefited by this competition, for they believed that carriers which lowered rates at competitive points still earned some surplus over out-of-pocket costs upon the business that they secured, and did not, therefore, call so heavily upon noncompetitive traffic for revenue with which to meet their general costs. These arguments on either side are repeated to-day with little change after forty years.

Interpretation of the Law

As a matter of fact, Section 4 as first enacted produced less effect upon railway business than was expected, because the exceptions in the law proved more important than had been supposed would be the case. The principal clause cited by railroad companies which desired to construe their obligations narrowly was that which contained the words "under substantially similar circumstances and conditions." It was eminently proper to put these words into the law. Indeed, if the legislature had not inserted them, the courts would have supplied them by interpretation. But it was none the less difficult to apply them to concrete cases. The railroads contended that if there was competition at town A and no competition at town B, then conditions were dissimilar at A and B, and that a lower charge to the former was permissable even though A was more distant than B and upon the same line. The Interstate Commerce Commission replied that mere competition at the more distant town did not justify a lower rate, unless the competitor was a water carrier or a railroad not subject to the Act to Regulate Commerce.

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[1] 24 Stat. L. 379, 380, 1887.

The United States Supreme Court ruled against the Interstate Commerce Commission upon this point, holding that competition by a railroad subject to the act was also a condition which might make conditions dissimilar. Such a conclusion may have been inevitable from a legal point of view. Since, however, railroads seldom thought of charging less to a distant than to a near-by point except under pressure of rail or water competition, this ruling rendered Section 4 practically ineffective; and it so remained between 1897, the date of the Alabama Midland decision[1] and the passage of the Mann-Elkins Act of 1910.

Amendment of 1910

The Act of 1910 made three changes in Section 4.

The first and most important alteration was the elimination of the words "under substantially similar circumstances and conditions."[2] The effect was to allow comparisons of long and short haul rates, even when conditions were not similar, and to force carriers to rely upon the dispensation of the Interstate Commerce Commission as provided in the original law, as a condition of continuance of greater charges for shorter than for longer distances. Henceforth it was to be the Commission which was to decide when the law should be suspended, not the courts.

The second change was the insertion of words in the section which made the law clearly applicable to routes made up of several connecting railroad lines as well as to rate relations upon a single railroad. This had not been the original intention of the framers of the Act of 1887, but in the course of time the amendment came to seem both natural and desirable.

Finally, the act provided that when a railroad reduced rates to or from competitive points in competition with a water route it should not be permitted to increase them again unless the proposed increase could be shown to rest upon changed conditions other than the elimination of water competition. It may be said that application of this rule has proved difficult and that the law in this respect is not to-day enforced.

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[1] I. C. C. v. Alabama Midland Railway Company, 168 U. S. 144, 1897.

[2] 36 Stat. L. 539, 547, 1910.

Amendment of 1920

In 1920 Section 4 was once more amended, so that the proviso now reads as follows:

> "*Provided,* That upon application to the Commission such common carrier may in special cases, after investigation, be authorized by the Commission to charge less for longer than for shorter distances for the transportation of passengers or property; and the Commission may from time to time prescribe the extent to which such designated common carrier may be relieved from the operation of this section; but in exercising the authority conferred upon it in this proviso the Commission shall not permit the establishment of any charge to or from the more distant point that is not reasonably compensatory for the service performed; and if a circuitous rail line or route is, because of such circuity, granted authority to meet the charges of a more direct line or route to or from competitive points and to maintain higher charges to or from intermediate points on its line, the authority shall not include intermediate points as to which the haul of the petitioning line or route is not longer than that of the direct line or route between the competitive points; and no such authorization shall be granted on account of merely potential water competition not actually in existence. . . ."[1]

The reader will note the addition of the words "reasonably compensatory," and the clauses relating to charges upon a circuitous railroad line. By reasonably compensatory is apparently meant a rate which yields something more than out-of-pocket costs, although how much more it is difficult to say. The reference to circuitous routes can be illustrated by a diagram.

Let the line AXB represent the direct route between A and B, and let the line AYB represent the indirect route. The distance from A to B *via* X is 400 miles; the distance from A to Y is also 400 miles; while the distance AYB is 600 miles.

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[1] 41 Stat. L. 456, 480, 1920.

Under these conditions the Commission is authorized to permit carrier AYB to charge the same rate over its circuitous line between A and B that carrier AXB charges over its dircet line, and to maintain also a higher level of charges from A to points O and P. The rate from A *via* Y to B, for instance, may be $1, the rate to O, $1.25, and the rate to P, $1.50. But the rate from A to Y, says the law, shall not be greater than the rate from A *via* X to B, because the distance is no greater.

There has been no further change in Section 4 of the Interstate Commerce Act since 1920, although a minority in Congress refuses to admit that the presence of actual water competition at a more distant point justifies carriers in reducing rates on the longer, below rates on the shorter, intermediate haul, and has unsuccessfully advocated still further amendment of the law. The minority is led by Senator Gooding, of Idaho, who is especially interested in transcontinental railroad rate-making.

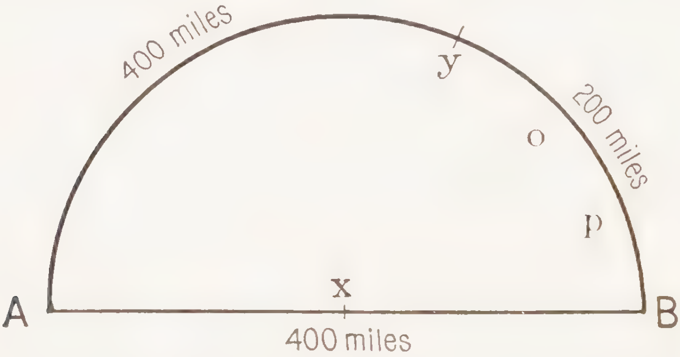

Diagram Illustrating Long and Short Haul Clause, 1920

Defense of Greater Charges for Lesser Hauls

The argument by which greater charges for shorter hauls is justified in the United States rests upon two premises. First, that exceptionally low rates must be quoted to terminal points in order to secure business. And second, that such low rates may be sufficient to cover the out-of-pocket costs of the traffic which they are designed to attract, and to make some contribution also to the general expenses of the railroad, although they do not yield an average profit and therefore cannot be generalized without depriving the railroad company of that fair return upon its investment which it must have to live.

When the facts are as stated, the effect of so-called long and short haul rate making is to allow the railroad which quotes the low rate to earn some extra revenue, while the position of intermediate towns is rather improved than made worse, because these towns are no longer required to bear the full burden of general railroad expenses that they would otherwise be obliged to support.

Most students of railroad economics agree that the railroad position as outlined in the two preceding paragraphs is in so far sound. Even the Interstate Commerce Commission shares this view. On the other hand, the difference between long haul and short haul rates is so great in many instances as to suggest that the near-by points are unreasonably taxed, and, more serious still, the participation of circuitous lines in the haul between given termini occasions waste in transportation in many cases which is difficult to defend. Round-about hauls are not always wasteful, but they frequently are, and a rate-making policy which provides indifferently for shipments over shorter or over longer routes should at least be cautiously applied.

The Theory of Equalization in Local Rate-making

While instances of greater charges for shorter hauls over the same line in the same direction undoubtedly present the most extreme examples of what is known as local discrimination, we have to bear in mind that local discrimination is by no means confined to practices of this type. In substance, indeed, any rate adjustment is discriminatory which does not relate rates in ways which conform to prevailing views of public policy. It is the function of courts and commissions through decisions, and of legislatures through laws, to express these views, and it is the duty of railroads to be guided by them.

We shall conclude this chapter with a brief discussion of two general contentions which have figured in cases of local discrimination before the Interstate Commerce Commission, referring the reader to the chapters upon the theory of rates for additional treatment of the principles involved.

The first contention is that rates should be so adjusted as to admit a maximum number of producing centers into any market, and so also as to give every locality a maximum number of sources from which to draw its supplies. Still another illustration of the same principle is the demand of distributing centers for rates which will place them on an equality with each other in handling trade between important sources of production and the markets in which these supplies are sold.

The contention just referred to explains a number of American rate practices which would otherwise be hard to understand. Such is, for instance, the quotation of export rates from the Middle West through the Atlantic seaboard cities of New York, Philadelphia, Baltimore, Boston, and Newport News, in inverse proportion to the cost of ocean transportation from each town to the European markets in which all of the cities named sell their wares. The purpose clearly is to give each of the towns mentioned a share of the through business. Is this fair? Is it wise? Is it in accord with public policy? Or should rates be based upon cost, distance, or some other physical fact, and business be allowed to go where it will?

The same question may be asked when a number of coal mines are assigned to a rate group in which each producer pays the same rate to market as his competitor in spite, sometimes, of considerable differences in the distances hauled. Steel plants, fruit ranches, cotton mills, and many other types of producers as well are often treated in this way. Indeed, study will show that the equalization principle is widely recognized in American rate-making, and that it receives some, though perhaps less complete application, in the rate systems of European states. The advantage of the practice is that it decentralizes industry. Its disadvantage is that it tends to increase the volume of transportation required in the production and distribution of goods.

The Principle of Natural Advantage

The second contention which is advanced in cases involving relative rates between different places is that rate structures should recognize natural advantages, not seek to counteract them. This theory is opposed to the principle of equalization. It tends to preserve and to emphasize inequalities, not to cover them over. Its influence is rather, therefore, to concentrate than to distribute industry.

According to the Interstate Commerce Commission, cities may possess the following natural advantages connected with transportation:

1. Nearness. Obviously, nearness to market is a natural advantage, as is nearness to source of supply.

2. Low cost of operation. The effect of low cost is analogous

to the effect of nearness. The simplest case is that of a route between two towns which is devoid of natural obstacles, such as mountains or streams. A city which reaches its markets over such a route possesses a natural advantage that may be recognized in the rate.

3. Competition. In addition to nearness and ease of access, a town which is located at the junction of a railway and a waterway or of two railways, or, indeed, of any two routes over which shipments can be made, has a natural advantage. This is essentially the argument upon which the transcontinental rate structure is built up, and also that upon which the Section 4 cases are decided. Not only direct competition should be considered under this head, but market competition also. When a town can buy from several markets, or when it can sell in several markets, although there may be but one route from or to each destination, it enjoys a bargaining advantage which is important.

The type of instances in which the theory of natural advantage has played a prominent part may be illustrated by the following cases:

In 1917, producers of pig iron in Alabama and Tennessee asked for a reduction in rates to points in New England and Trunk Line territories. They argued that southern iron was at a disadvantage in Eastern and New England markets as compared with iron from near-by furnaces, and that their competition should be encouraged by a decrease in rates. To this argument the Commission replied that it was not its function to balance commercial conditions or to equalize advantages growing out of location so as to bring manufacturers and markets into competition upon equal terms.[1]

In 1913, the city of Port Arthur, Texas, asked for reductions in its rates on export cotton, in order to bring these rates 1.5 cents below the rates to Galveston. Port Arthur and Galveston were in competition. Galveston was located upon the Gulf of Mexico. Ships reached Port Arthur, on the other hand, only after 7 or 8 miles voyage through an artificial channel. Besides this, cargoes were uncertain at Port Arthur, but reasonably certain at Galveston, while Port Arthur was 340 miles from the cotton-growing area in Texas, and Galveston was only 285 miles from these districts. In short, Port Arthur was at a disadvantage as compared with Galveston, and desired to offset this disadvantage by securing a corresponding advantage in its railroad rates. This the Interstate Commerce Commission refused to approve.[1]

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[1] Sloss Sheffield Steel & Iron *v.* L. & N. R. R. Co., 46 I. C. C. 559, 562, 563, 1917

In 1916, the mills of Laona, Wisconsin, complained that it was impossible to sell lumber in Michigan in competition with mills located in Green Bay, Wisconsin, and in other towns on the western shore of Lake Michigan. The rate from Laona to Grand Rapids, Michigan, was then 15.9 cents per 100 pounds, and the rate from Green Bay, 10.5 cents. The distances involved were, respectively, 290.31 and 219.2 miles. Laona asked for the same, or approximately the same, rates to Michigan points as those enjoyed by Green Bay, so that she might compete on equal terms. But the Commission replied that the Green Bay rates to Michigan were held down by the competition of car ferry lines across Lake Michigan. This constituted a natural advantage. The Commission did not believe that it was its function to equalize commercial conditions or to neutralize geographical advantages by such adjustments as would enable a shipper to compete in markets otherwise closed to him, and the petition of Laona was therefore denied.[2]

The theory of natural advantage is reasonably easy to understand and to apply so long as the advantages contemplated are expressed only in terms of cost of transportation. So interpreted, it becomes a doctrine justifying relations of rates based upon relative costs as contrasted with the equalization theory in which competition is given greater weight. The introduction of competition into the concept of natural advantage is, however, highly confusing. Probably it is better not to take either theory too seriously, but to regard both the natural advantage and equalization doctrines rather as working rules, to be used alternatively in settling practical problems, than as genuine theories to be tested by the usual canons of scientific criticism.

Relationships in Rates Determined by Economic Policy

In the last analysis, the question of relative rates to or from competing localities is less a question of conformity between the practice of transportation companies and a rule of justice than it is a problem of economic statesmanship relating to the location of industry and to the selection of concentrating and distributing points for the products of factory, mine, and farm. If authority could determine a principle of rate-making, to consider only this aspect of the matter, and if such a principle could be rigidly applied, then the competition for geographical industrial advantage might take place outside of rates and unconcerned with it, much as the competition in a game of cards is subject to the rules of the game and unconcerned with their revision. There are examples in some countries and in some transportation where this condition exists, but they are rare. So long as routes compete, and the rights of geographical or industrial units to share in a described traffic are subjects for discussion, then so long must existing or proposed relationships in transportation find their ultimate justification in their effect upon the structure of industrial society and the efficiency with which the production and distribution of goods is carried on. This may be expressed in the doctrine that problems of local discrimination are to be resolved from the point of view of economic policy. While such a practice may seem to lack certainty and finality, it alone can assure consideration of all the factors in each situation on which decision must depend.

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[1] Port Arthur Board of Trade *v.* Abilene & Southern Ry. Co., 27 I. C. C. 388, 1913.

[2] Connor Lumber and Land Co. *v.* Akron, Canton & Youngstown Ry. Co., 40 I. C. C. 111, 1916.

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CHAPTER XVI

THE RELATIONS BETWEEN CARRIER AND SHIPPER. COMMON-CARRIER LIABILITY

Salient Facts in Transportation

The salient facts in transportation are, first, the presence of a complicated machine which makes movements possible in certain directions over pathways of earth, water, air, and steel, and second, the actual movement of persons and things in immense volume upon the paths that have been laid out. These are the matters with which preceding chapters have been concerned.

It is not desirable, nor scarcely possible, in a single treatise to discuss each of the many aspects from which this mechanism and movement may be regarded. We shall, however, from this point in the discussion select such topics relating to transportation as appear to the author appropriate to a study of the economic and business portions of the subject.

Relation Between a Common Carrier and Its Public

The first of these topics concerns the general legal relations which exist between a common carrier and its public.

The distinguishing mark of a common carrier is that he undertakes generally, and for all persons indifferently, to carry goods or persons and deliver them, for hire. The private carrier transports for himself or for a narrowly defined clientele; the common carrier transports for anyone who will pay his charges. Most inland water carriers, most railroads, street and interurban railways, most commercial air lines, and many automobile freight or passenger organizations are common carriers. The term, therefore, includes the major portion of the agencies which carry on the business of transportation in the United States and in England.

Now in the course of time, communities have recognized the extreme convenience of the common carrier, both for the transportation of passengers and for that of goods. And as this appreciation has grown, so has the tendency to fix certain responsibilities upon the persons who present themselves, offering to serve the public. Some of these responsibilities are traceable to the conditions under which the first common carriers operated, such as the wildness of the times, the loneliness of roads, and the dangers of theft. Others are perhaps due to the monopoly possessed by many carriers, and to the dangers of extortion. Carriers can avoid these responsibilities by withdrawing from public employ, but there is profit in common carriage, and the enterprise has not lacked in representatives.

The chief responsibilities laid upon the common carrier to-day may be stated as follows:

1. The carrier may not refuse to serve.
2. The carrier must serve at a reasonable price.
3. The carrier must serve all equally.
4. The carrier is responsible for the safe delivery of the goods or persons committed to its care.

Let us consider these responsibilities in turn.

Liability of Common Carriers

In the daily work of the common carrier the responsibility which is most frequently insisted upon by the public is that for the safe delivery of goods which have been intrusted to the railroad's care. This responsibility is frequently referred to as the liability of an insurer. The railroad, that is to say, is regarded as an insurer of the commodities which it transports, and is asked to make loss or damage good, whether or not the injury is the result of its own fault.

Railroad is Not Technically an Insurer

Strictly speaking, the railroad is not an insurer. This point was decided by the United States Supreme Court a number of years ago in a case in which suit was brought against the Nashville and Chattanooga Railroad Company to recover the value of a consignment of cotton destroyed by fire while in the railroad's hands.

The cotton in question had been insured by an insurance company, and this company, having paid the loss, sued the railroad in the name of the shipper. The railroad refused to pay, alleging that it stood in relation to the owner at most in the position of double insurer, and that the owner, being indemnified, could not thereafter sue or permit suit in his name against the carrier.

In reply to this argument the court ruled that the railroad was not an insurer, although often loosely so called. Its contract, the court said, was not one of indemnity, independent of the care and custody of the goods shipped; it was not entitled to a cession of the remains of the property, or to have the loss adjusted upon principles peculiar to the law of insurance. The insurance company which had originally paid the shipper for the loss was therefore allowed to maintain suit in the shipper's name, and eventually to recover the value of the cotton from the railroad.[1]

Nature of the Carrier's Liability

While the railroad is not, therefore, technically an insurer of the articles it transports, it is nevertheless subject to peculiar liability with regard to them. Where injury or loss occurs the presumption is that the railroad is at fault. Though there are exceptions which will presently be mentioned, the general rule is that proof that goods are delivered to a carrier in good condition, and received back by the consignee in bad condition, is sufficient to support a claim for recovery.

The common-law liability of carriers in old England was stated many years ago to be that if "a delivery to carry or otherwise manage . . . " is made "to one that exercises a public employment, . . . and he is to have a reward, he is bound to answer for the goods at all events. . . . The law charges this person," said Lord Holt, "thus intrusted to carry goods, against all events, but acts of God, and of the enemies of the King. For though the force be never so great, as if an irresistible multitude of people should rob him, nevertheless he is chargeable. And this is a politic establishment," the judge continued, "contrived by the policy of the law, for the safety of all persons, the necessity of whose affairs oblige them to trust these sorts of persons, that they may be safe in their ways of dealing; for else these carriers might have an opportunity of ondoing all persons that had any dealings with them, by combining with thieves, &c., and yet doing it in such a clandestine manner as would not be possible to be discovered. And this is the reason the law is founded upon in that point." [2]

It would be unjust to our railroad managements to argue that they are prone to-day to conspire with thieves to the disadvantage of shippers, but the policy of the common law as it was formulated in mediæval England still finds justification by reason of the shipper's inability to determine, in most cases, the cause of loss or damage to goods when loss or damage occurs. The injury commonly occurs at a distance from the shipper's place of business. He has no representative upon the ground, nor any means of obtaining information from the carrier's servants. Not only is the carrier the better informed party, but it is usually in a better position than the shipper to prevent repetition of the loss in later cases by adopting proper safeguards. Even under changed economic conditions, therefore, the legal rule imposing liability upon the carrier irrespective of negligence remains a "politic establishment" and is consistently enforced by the courts.

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[1] Hall and Long *v.* The Railroad Companies, 80 U. S. 367, 1871.

[2] Coggs *v.* Bernard, 2 Lord Raymond, 909; 1 Smith's Leading Cases, 369; cited in 52 I. C. C. 671, 1919.

Excepted Causes

We have now stated the common-law principle which controls the assignment of responsibility as between carriers and shippers in case of loss or damage. There are, however, certain exceptions to the rule laid down, as there are to most rules. The carrier's peculiar liability does not extend to losses due to the following causes:

1. Acts of God.
2. Acts of the public enemy.
3. Acts of the shipper himself.
4. Acts of public authority.
5. The inherent vice or nature of the goods transported.

In case of all such losses the carrier is only liable if shown to be negligent, and is not liable from the mere fact that goods have been damaged while in its custody.

Let us consider a few instances which will illustrate the nature and limitations of a carrier's liability according to the foregoing principles and qualifications thereof.

Illustrative Cases

A simple recent case concerned the shipment of two pieces of granite from Minneapolis, Minnesota, to Waseca in the same state. The evidence tended to show that the blocks of granite were in good condition when delivered to the carrier, and that when they arrived at Waseca they were broken and had to be replaced. The damage was not due to one of the excepted causes, and the carrier was held liable, although it was not known that the injury proceeded from the carrier's fault.[1]

But the decision of the court was different in a case some years earlier which involved the loss of a pair of trunks. These trunks were delivered to a railroad at Cincinnati for transportation to Washington, D. C. There was continued and heavy rainfall while the trunks were *en route*, so much so that the carrier feared washouts and exercised great care in the handling of the train on which the trunks were loaded. Eventually the carrier even withdrew the train from its main track and placed it in a yard at Conemaugh, near the Conemaugh River. While the carrier's equipment was supposedly safe at this point, a dam that held back a reservoir upon a tributary stream gave way, and a wave of water, descending a narrow valley, destroyed both the train at Conemaugh and its contents. The catastrophe was known as the Johnstown flood. It caused loss, but the loss was due to an excepted cause, namely an act of God, and the carrier was not held liable.[1]

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[1] Haglin-Stahr Co. *v.* Montpelier and W. R. R. Co., 102 Atl. 940, 1918.

An illustration of another excepted cause, the inherent vice of the article shipped, may be found in a case where a shipper forwarded a hogshead of molasses on one of the warmest days of summer. The molasses fermented and burst while being unloaded, but the carrier was not held responsible.[2] Cases where cattle gore each other in course of transportation are similarly treated by the courts.

Acts of the public enemy include damages due to acts of war. Thus, during the Civil War, railroads were not held liable for goods seized by the Confederate army,[3] and the same rule would have been applied during the recent World War had articles within the jurisdiction of American courts been seized by German armies.

In short, there is a considerable class of cases involving loss or damage to goods where courts believe public policy not to require the application of the strict rule of carrier's liability, but only a modified rule, coupling liability with negligence.

Statutory Regulation of Liability

In view of the occasional differences of opinion between courts, and the consequent uncertainty of the law with respect to excepted cases, many state legislatures have defined by statute the kinds of loss for which railroad companies shall be held liable. The best known provisions which derive their authority from statute are, however, not state, but federal. They are to be found in the clauses of the standard bill of lading and in the standard live-stock contract prescribed by the Interstate Commerce Commission under authority of Congress.

The provisions of the standard bill of lading with respect to "excepted causes" are as follows:

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[1] Long *v.* Pennsylvania, 147 Pa. St. Rep. 343, 1892.

[2] Faucher *v.* Wilson, 38 Atl. 1002, 1895.

[3] Lewis & Co. *v.* Ludwick, 98 Am. Dec. 454, 1869.

> "No carrier or party in possession of all or any of the property herein described shall be liable for any loss thereof or damage thereto or delay caused by act of God, the public enemy, the authority of law, or the act of default of the shipper or owner, or for natural shrinkage. The carrier's liability shall be that of warehouseman, only, for loss, damage, or delay caused by fire occurring after the expiration of the free time allowed by tariffs lawfully on file . . . after notice of the arrival of the property at destination or at the port of export (if intended for export) has been duly sent or given, and after placement of the property for delivery at destination, or tender of delivery of the property to the party entitled to receive it, has been made. Except in case of negligence of the carrier or party in possession (and the burden to prove freedom from such negligence shall be on the carrier or party in possession), the carrier or party in possession shall not be liable for loss, damage, or delay occurring while the property is stopped and held in transit upon the request of the shipper, owner, or party entitled to make such request, or resulting from a defect or vice in the property, or for country damage to cotton, or from riots or strikes."

A briefer statement, though on some points more explicit, is printed in the uniform live-stock contract.

> "Except in the case of its negligence proximately contributing thereto, no carrier or party in possession of all or any of the live stock herein described shall be liable for any loss thereof or damage thereto or delay caused by the act of God, the public enemy, quarantine, the authority of law, the inherent vice, weakness, or natural propensity of the animal, or the act of default of the shipper or owner, or the agent of either, or by riots, strike, stoppage of labor or threatened violence.
>
> "Unless caused by the negligence of the carrier or its employees, no carrier shall be liable for or on account of any injury or death sustained by said live stock occasioned by any of the following causes: Overloading, crowding one upon another, escaping from cars, pens, or vessels, kicking or goring or otherwise injuring themselves or each other, suffocation, fright, or fire caused by the shipper or the shipper's agent, heat or cold, changes in weather, or delay caused by stress of weather or damage to or obstruction of track or other causes beyond the carrier's control."

The clauses of the bill of lading and live-stock contract repeat the exceptions to carrier's liability before discussed, with some additions. While the reader may be expected to observe these additions, they will not be now discussed beyond saying that exceptions to carrier's liability may be multiplied by proper contract between the parties, or exceptions may be laid down by statute or prescribed by duly authorized state or federal commissions, and the new conditions will be sustained by the courts.

Beginning of Common Carrier's Liability

We may now return to the general rule imposing responsibility upon common carriers for safe delivery of persons and property intrusted to their care. Out of these principles grows a substantial part of the law of common carriers. We shall not, in this chapter, attempt to state the whole of railroad law, but we shall call attention to a few of the matters which are frequently in dispute.

One important question is as to the moment at which a carrier's liability begins. Is the issue of a bill of lading necessary to fix responsibility upon the railroad? Must the shipper deliver freight at the carrier's depot? Must the freight be boxed or marked in any particular way? What, in brief, constitutes acceptance by the carrier?

In the case of Meloche *v.* Chicago, Milwaukee, and St. Paul Railway Company, the plaintiff was the survivor of the firm of Meloche Brothers, who, prior to August 25, 1896, carried on a drug business in the village of Ontonagon, Michigan. Some days before August 25, the firm closed its drug store and packed the contents. The goods were properly marked for shipment to Ishpeming, Michigan, and were placed inside the defendant's freight depot for immediate shipment.

Because the railroad had no car by which to ship on the day of delivery, the freight was held until the following morning. In the afternoon of August 25, before the goods had been shipped and before a bill of lading had been issued, a fire occurred in Ontonagon which destroyed almost the entire village, including the goods of Meloche Brothers. On these facts, the railroad was held liable.[1]

On the other hand, the railroad was not held liable in the case of Burrows *v.* Chicago, Burlington, and Quincy Railroad Company.[2] In this case the plaintiff testified that just prior to May 12, 1907, he had given a tent show in the village of Loup City, Nebraska. He desired to move his show to the village of Ashton, some twelve miles distant on the line of defendant's railroad. May 12 was Sunday. On that day the railroad placed a car on its side track at the plaintiff's disposal, and he was notified of its position. On Sunday afternoon, plaintiff and his employees took possession of the car and placed therein his main tent with its poles, stakes, ropes, and so forth, together with a gas machine which he used to manufacture gas and thus supply light for his evening performances. When he had partly loaded his outfit he or one of his men closed the car door. The remainder of his plant, which included his cook tent, his sleeping tents, and bedding, together with some personal baggage, his gasoline stove and cooking utensils, were kept out for use overnight. These were to be loaded the following morning, and plaintiff was then to furnish a statement of weights and contents to the railroad agent, who would then seal the car and fix the charges for transportation. The car was to go forward with the company's 9:30 passenger train.

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[1] Meloche *v.* C. M. & St. P. Ry. Co., 74 N. W. 301, 1898.

[2] Burrowes *v.* C. B. & Q. R. R. Co., 123 N. W. 1028, 1909.

On Monday morning, at about five o'clock, it was discovered that the car which contained plaintiff's goods was on fire. In spite of all efforts to extinguish the blaze, the car with its contents was totally destroyed. No notice was given to the defendant or to its agent that plaintiff had commenced to load the car, and the railroad agent had no actual knowledge of the fact of loading until the car was discovered to be on fire.

In neither of these cases did the goods start upon their journey to destination. In neither case was a bill of lading issued. In the one case, however, the shipper had completed his share in the transaction. He had packed the freight, marked it, and placed it in the carrier's depot ready for transportation. The carrier's agent was aware that the freight was on hand. The delivery was complete. In the other case, the shipper delayed the completion of loading for his own convenience. The consignment was not ready to move, but something still remained to be done by the shipper before transportation could be begun. The delivery was incomplete, and the shipper, not the carrier, was still responsible for the safety of the goods.

Ending of Liability

Another important question is as to when the liability of a common carrier ceases. Until this liability is at an end, the carrier must make loss good, irrespective of the cause of the loss, unless "excepted causes" are responsible. After liability ceases the common carrier is liable only for the negligence of its agents.

On this point two contradictory rules are to be found in the common law.

Norway Plains Case

One of these rules is known as the "Massachusetts rule," and springs from a decision in the leading case of Norway Plains *v.* Boston and Maine Railroad Company.

The Norway Plains case involved two parcels which were shipped from Rochester, New Hampshire, to Boston, Massachusetts. One parcel arrived on Saturday, November 2, and was ready for delivery at least as early as November 4. The other parcel reached Boston late on Monday, November 4. The consignee knew on Monday that his goods had arrived, but he did not take them. During the night of November 4 the railroad station at Boston burned down and the parcels were destroyed.

In this case the judgment was for the carrier. The court held that the responsibility of the railroad as common carrier continued until the goods were removed from the cars and placed upon the platform. If it was not possible to deliver the goods at once, because the consignee was not at hand or for any other reason, the carrier was required to keep the freight safely, but its liability was only for loss or damage due to its own negligence.[1]

Moses v. Boston and Maine Railroad Company

The other rule is known as the New York or New Hampshire rule. It is in substance that the peculiar liability of the railroad continues after arrival of the goods until consignee shall have had a reasonable time to remove them from the carrier's premises.

The leading case which supports this principle is Moses *v.* Boston and Maine Railroad Company.[2] Here it appeared that the Boston and Maine Railroad carried ten bags of wool from Exeter to Boston, Massachusetts, between November 2 and 4, 1850. The wool reached the railroad's Boston depot between one and three o'clock in the afternoon of November 4. From two to three hours were required to unload from cars to warehouse, and the warehouse closed at five o'clock. The wool was still in the warehouse at five, and during the night of November 4 it was destroyed by fire.

Under the decision in the Norway Plains case the carrier would not have been liable on the foregoing facts, for the wool had certainly arrived and had been unloaded from the cars before the fire occurred. But in the Moses case the court held that arrival was not enough. The consignee was entitled to a reasonable time in which to remove his goods, and during that time the railroad was liable as common carrier for loss irrespective of negligence.

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[1] Norway Plains Co. *v.* Boston & Maine R. R. Co., 61 Amer. Dec. 423, 1854.

[2] 64 Am. Dec. 381, 1856.

Mark Owen Case

It is of some interest to observe that the carrier's liability continues for the time specified in the tariff or bill of lading, even though the consignee has commenced to unload. This principle was laid down by the United States Supreme Court as late as 1921, in the case of Michigan Central *v.* Mark Owen & Company.[1]

In this case four carloads of grapes reached Chicago at different times. Upon the arrival of each car it was placed upon a public-delivery track of the railroad company. The consignee accepted each car, breaking the seals thereof, and both parties agreed that at the time the consignee started to unload, each of the cars contained all the grapes which had been originally given to the railroad for transportation.

Subsequent to the beginning of unloading, 126 baskets of grapes disappeared. The shipment moved under a bill of lading which continued carrier's liability for forty-eight hours after arrival of freight, but carrier maintained that its special liability had been terminated, nevertheless, by consignee's access to and partial removal of the goods. This the Supreme Court refused to concede, and the railroad was held responsible for the loss incurred.

Limitation of Liability

In any ordinary transaction either party may stipulate in the contract for a limitation of his liability. This the common carrier may also do, within limits. While he may not avoid responsibility for losses due to his own negligence, he may add, as we have seen, to the list of losses for which he is to be liable as warehouseman only. Moreover, the carrier may quote rates which are dependent upon the value of the articles shipped. If the shipper fails to declare what the value is, then the carrier will charge a minimum rate, and if loss or damage occurs, may refuse to be responsible for more than a minimum amount, which will be stated in the bill of lading. If the shipper declares a value that is above the minimum, the carrier's responsibility will be greater, but it will be entitled to a higher rate.

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[1] 41 Sup. Ct. Rep. 554, 1921.

An example of successful limitation of liability by a common carrier may be found in the American Express Company case of 1917.[1] Here a colt was shipped under a so-called live-stock contract. The contract contained spaces in which the freight was described. It further stated the rate to be charged, and that the rate was dependent upon the value of the goods. This was followed by Clause 3. This clause contained enumerations of various classes of animals, and fixed a primary valuation for each class; for instance, "For . . . horses . . . $100." "For . . . colts . . . $50." The fourth and fifth clauses provided that after ascertaining the rate to be charged for all classes of animals embraced in Clause 3 by applying to those classes the rate provided by the tariff sheets filed with the Interstate Commerce Commission, there should be added to such rate a stated percentage of the amount by which the declared valuation of the shipper exceeded the primary valuation fixed by the terms of Clause 3. The fifth clause also concluded with the declaration that the shipper, in order to avail himself of the alternative rates, had declared a value as follows, and contained blanks for the insertion of such a valuation.

In this case the shipper made no declaration of value. The colt moved at the lowest rate. The animal was lost. The owner sued to recover $1,916.70, being the colt's full value, but recovered instead $50, or the limited value stipulated in the live-stock contract summarized above.

A contract limiting liability need not, under the common law, be signed by the shipper—it is not even necessary that the shipper read it. It is sufficient that he forward freight under a bill of lading that contains limiting clauses. On the other hand, the limitation must take place by contract, express or implied. A newspaper or bulletin-board notice disclaiming responsibility will not, for instance, protect the carrier, and the railroad must give a consideration in return for the benefit which it secures. All these and still other matters have been discussed by the courts.

In actual practice the extent to which carriers may limit their liability for loss or damage to freight is controlled by statute, so that it is necessary to consult the laws of the different states in order to determine finally the carrier's responsibility in any given case. On interstate shipments, and particularly with regard to losses which are the result of carriers' negligence, the relations between carrier and shipper are governed by the following acts:

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[1] American Express Co. *v.* U. S. Horse Shoe Co., 37 Sup. Ct. Rep. 595, 1917.

Carmack Amendment

The material provisions of the Carmack amendment to section 20 of the Act to Regulate Commerce, approved June 29, 1906,[1] are as follows:

> "That any common carrier, railroad, or transportation company receiving property for transportation from a point in one state to a point in another state shall issue a receipt or bill of lading therefor and shall be liable to the lawful holder thereof for any loss, damage, or injury to such property caused by it or by any common carrier, railroad, or transportation company to which such property may be delivered or over whose line or lines such property may pass, and no contract, receipt, rule, or regulation shall exempt such common carrier, railroad, or transportation company from the liability hereby imposed: *Provided,* That nothing in this section shall deprive any holder of such receipt or bill of lading of any remedy or right of action which he has under existing law."

The Carmack amendment permits a shipper to recover from an initial carrier for loss or damage occurring anywhere in the course of shipment to a commodity which passes over several railroads on its way to final destination.

This may be illustrated by the following diagram:

A B C D
. ———————— . — — — — — — — . x x x x x x x x x .

Let the lines AB, BC, and CD represent distinct, but connecting, railroads. Let us suppose a shipment which originates at A and is consigned to D. Let us suppose, further, that this shipment is damaged at some point between C and D. Under the Carmack amendment, the consignor may sue either the initial line AB, or the line CD upon which the damage occurred. Before the passage of the Act, the shipper could sue line CD, but he could not sue AB, unless AB had specifically agreed to carry over the whole route and had so adopted roads BC and CD as its agents. Such agreements AB was careful to avoid. Speaking in legal terms, the Carmack amendment construed the mere receipt of property for transportation to a point beyond the line of the receiving carrier as an agreement for through transportation, and therefore logically deprived the initial carrier of the power to limit its responsibility to the class of accidents which occurred upon its own line.

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[1] 34 Stat. L. 595, 1906.

Stated in another way, the liability of an initial carrier for loss or damage which takes place anywhere between the point of origin and the point of destination of a shipment is exactly the same, when several connecting carriers are concerned, as it would be if the initial carrier owned and operated the entire railway between the points selected. The privilege granted to the shipper by the Act of 1906 is a considerable convenience to him, while it involves no real hardship to the railroad because the initial carrier may in its turn proceed against connecting carriers if these carriers are liable under general principles of common or of statutory law.

In addition to the provisions which give shippers the right of recovery against initial carriers, the Carmack amendment declares that an initial railroad may not make a valid contract exempting itself from liability for loss or damage which it, or its connections, may have caused. This means, in plain language, that a railroad may not stipulate for immunity from the results of its own negligence.

Agreed Valuation Under Carmack Amendment

However, even after the Carmack amendment was passed, it remained possible for carriers to escape the results of their negligent acts by the device of a restricted valuation, such as that described on page 294 *supra.* This was because the United States Supreme Court held that agreements for restricted valuation were not in a technical sense contracts which avoided responsibility for negligence. It is true that such agreements actually reduce the amounts which shippers can collect when they are damaged by the negligent acts of carriers, but the court is disposed to disregard this aspect of the question. Indeed, the chances that agreements of this type would stand were improved by the new law for the reason that the passage of the Carmack amendment was regarded by the courts as an exercise of federal power which made invalid state laws relating to the liability of carriers for loss or damage to interstate shipments of freight.

First Cummins Amendment

There is reason to believe that Congress did not expect that limited valuation agreements would be considered legal after the legislation of 1906. At any rate, this legislation was supplemented in 1915 by the so-called Cummins amendment to the Act to Regulate Commerce. The first Cummins amendment was approved on March 4, 1915.[1]

This new law had three parts:

The Cummins amendment extended the territorial application of the provisions of the Carmack amendment to the transportation of goods within the territories of the United States, the District of Columbia, and to goods exported to adjacent foreign countries.

The Cummins amendment also fixed, definitely and rigidly, the liability of the common carrier by making it liable for the full actual loss, damage, or injury caused by it or by any of its connections to the goods which it transported. The language of the act upon this point was as follows:

> " . . . and any such common carrier, railroad, or transportation company . . . shall be liable to the lawful holder of said receipt or bill of lading or to any party entitled to recover thereon, whether such receipt or bill of lading has been issued or not, for the full actual loss, damage, or injury to such property caused by it or by any such common carrier, railroad, or transportation company to which such property may be delivered or over whose line or lines such property may pass within the United States or within an adjacent foreign country when transported on a through bill of lading, notwithstanding any limitation of liability or limitation of the amount of recovery or representation or agreement as to value in any such receipt or bill of lading, or in any contract, rule, regulation, or in any tariff filed with the Interstate Commerce Commission; and any such limitation, without respect to the manner or form in which it is sought to be made is hereby declared to be unlawful and void: *Provided, however,* That if the goods are hidden from view by wrapping, boxing, or other means, and the carrier is not notified as to the character of the goods, the carrier may require the shipper to specifically state in writing the value of the goods, and the carrier shall not be liable beyond the amount so specifically stated, in which case the Interstate Commerce Commission may establish and maintain rates for transportation, dependent upon the value of the property shipped as specifically stated in writing by the shipper. . . .

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[1] 38 Stat. L. 1196, 1915.

The third part of the first Cummins amendment was a provision forbidding a carrier to provide a shorter period for giving notice of claim than ninety days, for filing claims a shorter period than four months, and for the institution of suit a shorter period than two years.

The first Cummins amendment passed Congress by a substantial majority, in spite of the opposition of some legislators who feared lest the Act would result in an increase in railroad rates. It struck particularly at the agreements for restricted valuation which, as has been pointed out, continued even after the passage of the Carmack amendment.

Second Cummins Amendment

The second Cummins amendment was passed on August 9, 1916.[1] This law eliminated the proviso of the first Cummins amendment relating to goods hidden from view by packing, etc., and added the following important clause:

> "*Provided, however,* That the provisions hereof respecting liability for full actual loss, damage, or injury, notwithstanding any limitation of liability or recovery or representation or agreement or release as to value, and declaring any such limitation to be unlawful and void, shall not apply, first, to baggage carried on passenger trains or boats, or trains or boats carrying passengers; second, to property, except ordinary live stock, received for transportation concerning which the carrier shall have been or shall hereafter be expressly authorized or required by order of the Interstate Commerce Commission to establish and maintain rates dependent upon the value declared in writing by the shipper or agreed upon in writing as the released value of the property, in which case such declaration or agreement shall have no other effect than to limit liability and recovery to an amount not exceeding the value so declared or released, and shall not, so far as relates to values, be held to be a violation of section ten of this Act to regulate commerce, as amended; and any tariff schedule which may be filed with the commission pursuant to such order shall contain specific reference thereto and may establish rates varying with the value so declared or agreed upon; and the commission is hereby empowered to make such order in cases where rates dependent upon and varying

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[1] 39 Stat. L. 441, 1916.

> with declared or agreed values would, in its opinion, be just and reasonable under the circumstances and conditions surrounding the transportation. The term 'ordinary live stock' shall include all cattle, swine, sheep, goats, horses, and mules, except such as are chiefly valuable for breeding, racing, show purposes, or other special uses."

The second Cummins amendment was an acknowledgment that the first legislation bearing this name had gone too far, and a return to the conditions of 1906. Its effect was to permit carriers once more to make agreements limiting their liability for loss or damage caused by their negligence to everything except ordinary live stock. The only qualification attached was that the agreed valuation should be accompanied by rates, authorized by the Interstate Commerce Commission, which should vary with the released value of the property transported. Even this qualification was omitted in the case of baggage carried on passenger trains or boats.

The restoration of the old procedure was made on representations of the Interstate Commerce Commission, backed by shippers who preferred to take the chance of loss rather than pay high rates, or to insure in outside companies.

Summary Statement With Respect to Limitation of Liability

At the present time, therefore, the situation with regard to the limitation of their liability by common carriers is as follows:

First, all questions relating to the limitation of liability on interstate shipments are controlled by federal law. Controversies arising with respect to intrastate shipments are settled according to the principles of the common law or by state statute.

It is permissible for a carrier to restrict its liability for loss or damage by contract with the shipper, provided it does not seek to escape the effects of its own negligence. In actual practice, however, the Interstate Commerce Commission prescribes the terms of the bill of lading which must be used on interstate shipments, and so determines the contract to which shippers and carriers subscribe.

In the case of baggage carried on passenger trains, carriers and shippers may agree upon a valuation which will limit the amount that may be recovered in case of loss. This agreement upon a restricted valuation is not regarded as a limitation of liability, and holds good even in case of losses due to carriers' negligence. The shipper must, however, receive a consideration for any concession which he is asked to make.

In the case of other property, not including ordinary live stock, an agreement upon a limited valuation may be consummated and enforced if the carrier has been authorized or required by the Interstate Commerce Commission to establish rates dependent upon the value which the shipper declares. Such agreements protect the carrier even when the loss or damage is due to carriers' negligence.

REFERENCES

See references at the end of Chapter XVII.

CHAPTER XVII

THE DUTY OF SERVICE

Common-law Duty of Service

Not only is a common carrier held to a high degree of responsibility in connection with the carriage of persons and goods, but it is subject to a still more elementary duty—that of service. The rule upon this point is expressed in one of the standard legal treatises as follows:

> "It is the common-law duty of a common carrier, on being tendered a reasonable compensation, to receive at reasonable times and carry all goods offered to it for transportation, within the line of its business or of the kind which it undertakes to transport. Having room or the facilities for transporting the goods, and holding itself out to the public as ready and willing to carry goods for all persons indifferently, the law imposes upon it the duty of receiving and carrying them over its established route." [1]

Why, one may ask, should a carrier ever desire to refuse to serve? Why, to follow the wording of the preceding paragraph, should it decline, having facilities and being tendered compensation, to transport goods of the kind which it has offered to transport? The answer in most cases is to be found in some angle of business policy. In commercial life it is, for instance, common practice for a wholesaler to refuse to place his goods with a retailer who handles competing lines, or for a retailer to refuse to handle the wares of a wholesaler who sells directly to the consumer. Sometimes, also, a manufacturer, such as a maker of shoe machinery, will refuse to sell one type of machine to a shoe factory unless the factory equips itself completely from the same source of supply. These policies are intended to increase sales and, therefore, production in the long run, but they work at the beginning by means of partial refusals to serve. Policies of this type are not permitted to common carriers.

Memphis News Publishing Co. v. Southern Railway

One of the best-known instances in which a railroad refused to serve, for reasons that it thought satisfactory, occurred in Tennessee in 1902. It appeared that the Southern Railway had at this time a contract with the publishers of a daily newspaper, the *Commercial Appeal,* at Memphis, under which it undertook to carry papers from Memphis out into the country each morning upon an early train. The value of the service to the newspaper was increased by making it exclusive, and so the Southern Railway also agreed to refuse, so far as it might lawfully do so, to carry upon this train newspapers of any other publishing company. In return, the publishers of the *Commercial Appeal* guaranteed a minimum revenue for the train in question, and offered certain other considerations which it is not necessary to explain.

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[1] Moore on Carriers, 2d ed., pp. 116–117.

The arrangement described operated without apparent friction until the year 1902, when the Memphis News Publishing Company began the publication in Memphis of the *Memphis Morning News.* The *News* secured several thousand subscribers in the territory reached by the early train of the Southern Railway, and demanded the right to ship its papers by this train to stations where the train was scheduled to stop. This demand was refused because the Southern Railway felt bound by its contract.

But the Supreme Court of Tennessee properly held that the contract constituted no defense. The railroad was a common carrier, said the court. As a common carrier it must treat all alike. Granting that goods not dangerous in their nature and not unfit for shipment were offered at a proper place and time, and that the cost of carriage was tendered, and the railroad had facilities for shipment, then it must accept and transport them. The failure of the railway to satisfy this elementary duty, as well as the discrimination inherent in the different treatment of the two publishing companies, was sufficient to dispose of the case.[1]

Chicago and Akron v. Suffern

Another case of refusal to serve came before the courts in 1889. Here the offending carrier took up a switch which connected its main line with a certain coal mine, in violation of a plain provision of the Constitution of the State of Illinois, in which the mine was located. The coal company sued, and the railroad did not deny the statement that the switch was removed because the coal mine had allowed a switch to be built from its mine to the line of a second and competing railroad, the Atchison, Topeka, and Santa Fé. This removal of a switch was an emphatic method of refusing service, and was held illegal when the case came to trial.[1]

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[1] Memphis News Publishing Co. *v.* Southern Railway Co., 75 S. W. 941, 1903.

Bennett v. Dutton

Still another, and a still older case, involved two competing stage lines in New England—common carriers equally with the railroads which later supplanted them. One of these lines ran from Lowell, Massachusetts, to Nashua, New Hampshire. The other also ran from Lowell to Nashua, but at Nashua connected with a third line, making a through route from Lowell, through Nashua, to Amherst and Francestown. The three stage-coaches thus referred to may be designated as the Tuttle, French, and Dutton lines, from the names of their owners.

Inasmuch as the Dutton and the French lines were operating as a single route, the former insisted that passengers from Lowell who desired to continue beyond Nashua in Dutton's line should come to Nashua by the French stages. Dutton would not, indeed, receive into his coaches, at Nashua, passengers for places above Nashua who had come up from Lowell to Nashua on the same day, in Tuttle's vehicles.

There was complaint of refusal to serve. The French-Dutton interests declared that their policy did not really constitute a refusal, but that it was merely a regulation of the place at which passengers would be received. Persons going from Nashua to Francestown were received at Nashua; persons going from Lowell to Francestown were received at Lowell. The policy was, however, more fundamental than Dutton or French admitted, and was so interpreted by the court. It was not for Dutton, said the judge, to inquire whether intending passengers came to Nashua by one stage or by another. If Dutton had room, he was bound to accept passengers without inquiry as to their antecedents.

As a result of these and of many other cases, the duty of common carriers to serve is so clearly understood to-day that there is little controversy over the principle involved. Disputes which arise concern rather the limitations to and qualifications of the duty of service than its essential character. These limitations include the following:

Carrier Owes Duty Only to its Public

It is inherent in the nature of the case that the carrier will limit the public which it undertakes to serve. The railroad business is transportation, and it owes no duty save to travelers or to shippers. This fact is generally recognized, although occasionally there are circumstances which give rise to litigation.

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[1] C. & A. R. R. Co. *v.* Suffern, 21 N. E. 824, 1889.

Thus, in Minnesota, in 1914, there was clearly an attempt to impose upon a carrier obligations toward an outside public. In this case the Minnesota Railroad and Warehouse Commission required the Great Northern Railway to install a six-ton scale at one of its stations for the weighing of cattle. The scale was not essential for any transportation purpose, but it was convenient to dealers and stock-raisers in buying and selling cattle. The Minnesota Commission saw fit to insist upon its installation, but the United States Supreme Court held that the railway had no obligations to dealers in live stock, apart from the transportation of their goods, and refused to sustain the disputed order.[1]

According to the same rule, a carrier is under no obligation to provide facilities for the sale of newspapers, fruit, and candy upon its train. Nor has a person the right to travel to and fro upon a railroad for the purpose of soliciting the passengers. For the railroad does not offer its services as a traveling newspaper stand, or as a location for the sale of merchandise. Its public consists of persons who seek change of location either for the pleasure of travel or because they desire to move from one place to another. This group does not include newspaper venders, or express men, or others of this type, and the railroad may refuse to serve such persons, or may discriminate between them at will.

Carrier Need Not Carry all Classes of Goods

To a reasonable extent a carrier also may restrict the classes of goods which it proposes to transport.

For example: a man named Honeyman presented himself in 1886 at the station of the Oregon and California Railroad at Portland, with four dogs, and sought transportation to a town further along the line. The railroad did not profess to carry dogs, did not wish to carry dogs, and its rules forbade the acceptance of such animals. The station agent explained all this to Honeyman. After some argument, however, the agent allowed Honeyman, as an accommodation, to put the dogs in the baggage car of the train, and to give the baggageman a gratuity to take care of them. Subsequently one of the dogs was injured. The railroad successfully defended itself from liability upon the ground that it was not a common carrier of dogs.[1]

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[1] Great Northern Railway *v.* State of Minnesota, 35 Sup. Ct. Rep. 753, 1915. See also Great Northern Railway *v.* Cahill, 40 Sup. Ct. Rep. 457, 1920.

In another instance, the treasurer of a California county boarded a train in California with satchels containing $91,952 in gold coin. The county treasurer was on his way to the state capitol at Sacramento, where he was to pay over the money which he carried to the state treasurer. Carrier's employees offered no objection when the county treasurer entered the train at San José, California, but all passengers were obliged to change trains at Niles, California, a way station, and the conductor of the second train refused to allow the treasurer to enter with his gold. Instead, he required that the funds be intrusted to a Wells Fargo Express agent who was on board. The treasurer objected. He asserted his right to go into one of the passenger cars with his satchels, or if not into a passenger car, then into the train baggage car. He offered at the same time to pay extra charges for the transportation of his money.

The railroad officer replied that money was not baggage, and could not be taken into a passenger car. For the rest, he declared that the treasurer's ticket gave him no right to travel in a baggage car, and, finally, that the railroad was not a common carrier of money, except through the medium of the Wells Fargo Express. This position the courts later sustained.[2]

These are two cases where the carrier was shown to have restricted its public offering by excepting named classes of commodities. Moreover, live stock and valuables are only two out of many articles which carriers may decline to transport. A railroad may refuse explosives, or glass, or other commodities requiring special care or specially subject to damage. Some carriers carry passengers only, some freight only, and neither is required to accept traffic of the other sort if it has never undertaken to handle it. On the other hand, a carrier may not make fine distinctions. If it carries fruit, it must carry vegetables. If it carries horses, it must carry cows. If it accepts one article out of a class it must take other articles of the same class.

Miscellaneous Qualifications of the Duty of Service

Other qualifications of the carrier's duty to serve are found in the principle that goods, to be carried, must be offered to the railroad at reasonable times and under reasonable conditions. It is against the public interest to require common carriers to keep their stations open twenty-four hours in the day, and the principle may be further extended. Not only must goods be tendered to the carrier at a proper time, but they must be presented at a proper place and properly packed for carriage. If the carrier desires, it may even insist that the freight charges be prepaid. These are reasonable restrictions and do not, properly understood, weaken the force of the primary obligation under which the common carrier rests in rendering service.

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[1] Honeyman *v.* Oregon & California Railroad Co., 57 Am. Rep. 20, 1886.

[2] Pfister *v.* Central Pacific R. R. Co., 70 Cal. 169, 1886.

Carrier Must Supply Facilities

In addition to its obligation to accept freight, a railroad is required to supply proper facilities. In this a railroad differs from other undertakings that are "affected with a public interest," in that the carrier's duty is not complete when it has placed the entire equipment which it possesses at the disposal of the public which it has elected to serve.

It follows that a railroad which offers service to the public is held to the obligation of providing adequate service. If business increases, so must the railroad plant be enlarged. Doubtless this obligation, like others, must receive a reasonable interpretation. Thus a railroad is not held responsible for failure to meet sudden and unexpected demands upon it. Nor, when traffic is seasonal, must it provide facilities to handle the peak load, knowing that these facilities will remain unused during the greater portion of the year. Its duty in both instances is to provide facilities which will meet normal demand, and to divide its services, when temporarily insufficient, between applicants upon some reasonable and nondiscriminatory basis. But normal traffic each railroad must accommodate, or surrender its franchise to some other and more capable group of business men.

Withdrawal from Service

Finally, a railroad may not withdraw freely from a service which it has once undertaken. The attitude of the courts upon withdrawal from public undertakings that have once been voluntarily entered upon is clear under the common law.

The general theory with respect to abandonment of railroad service is that parties which offer to perform the service of common carriage place themselves by this offer into relations with the state, which cannot be dissolved save with the consent of all parties concerned. It is obvious, as a practical matter, that the state cannot prevent a railroad company from surrendering its charter and retiring from the entire business of transportation, but the state can prevent a partial abandonment and require a railroad, if it is to operate at all, to maintain service upon all parts of the system covered by its articles of incorporation and service of all types contemplated in its original undertaking.

The legal principles stated in the previous paragraph are given expression in the common law and in the statutes of many American states. Since 1920 they have been also embodied in the Act to regulate commerce, at least to the extent that this statute now vests in the Interstate Commerce Commission, among other things, the power to grant or refuse permission to a railroad to withdraw from the field of interstate commerce.

Paragraph 18 of Section 1 of the Interstate Commerce Act, as amended in 1920, reads as follows:

> "After ninety days after this paragraph takes effect, no carrier by railroad subject to this Act shall undertake the extension of its line of railroad, or the construction of a new line of railroad, or shall acquire or operate any line of railroad, or extension thereof, or shall engage in transportation under this Act over or by means of such additional or extended line of railroad, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity require or will require the construction, or operation, or construction and operation, of such additional or extended line of railroad, and no carrier by railroad subject to this Act shall abandon all or any portion of a line of railroad, or the operation thereof, unless and until there shall first have been obtained from the Commission a certificate that the present or future public convenience and necessity permit of such abandonment."[1]

The following cases of applications made to the Interstate Commerce Commission for permission to abandon service under Section 1 of the Act to Regulate Commerce will illustrate the policy of the Interstate Commerce Commission under existing law. The quotations are from Commission decisions in the cases cited.

I. Application to abandon branch operated by a subsidiary of the Lehigh Railroad Company from Ganoga Lake to Ricketts, Pennsylvania, a distance of 3.83 miles.

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[1] 41 Stat. L. 456, 477, 1920.

> "The branch line in question was built about the year 1892 for the purpose of developing the timber resources in the territory served. It was used chiefly as a logging branch until 1914, at which time all the timber had been cut. A few years after the branch was built an ice industry was established at Ganoga Lake, and this line was utilized to transport the product of the ice houses. This ice business has been entirely discontinued and the machinery removed. No passenger service has been maintained since 1900, and no shipments of any kind have been hauled over the line since October, 1919. The country tributary to the branch is described as wild detimbered mountain land. Applicant states that it would cost from $15,000 to $20,000 to put the track in condition for operation and that there is no prospect of developing any traffic on the branch."[1]

Permission to abandon granted.

II. Application to abandon branch of Baltimore and Ohio Railroad in Stark County, Ohio. Length of track, 7.31 miles.

> "The branch was constructed in 1880, or about that time, to reach coal lands in the vicinity of Pigeon Run and Greenville. There are no cities, towns, or villages located on the line. There are a few farmers in the territory traversed by the branch, but they do not depend upon the line for their transportation requirements. No passenger trains have ever been run and no scheduled freight service has been maintained, the freight service having been limited to mine runs.
>
> "For five years ending December 31, 1920, the total tonnage hauled over the branch was 361,119 tons, of which coal traffic comprised 358,155 tons, equal to 99.18 per cent of the total. The remaining traffic consisted of commodities incidental to coal-mining operations. It is stated that the coal lands have been worked out and that the mines along the branch have been closed and dismantled. That portion of the line extending from West Lebanon Branch Junction to the Woodland mine, a distance of 1.46 miles, has not been in use for several years, and in many places fences have been built across the track. No trains have been operated on the branch for several months

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[1] 71 I. C. C. 150, 1922.

> and it is now used only for the storage of cars. Applicant states that the only business done on the branch in the last year consisted of spotting four cars for unloading at a point 600 feet from the main line.
>
> "It appears that the branch is in poor physical condition. The track is laid with fifty-six pound and sixty pound rails, which are badly worn, and no tie renewals have been made for a long time. Applicant states that there is no business in prospect to justify any expenditures for repairs or renewals, and that the public would not be inconvenienced by the proposed abandonment."[1]

Permission to abandon granted.

III. Application to abandon 22 miles out of 115 miles operated by the Louisville and Nashville Railroad from Chestnut to Natchitoches, Louisiana.

> "Between Chestnut and Natchitoches the country is sparsely settled and this road does not serve any towns of size or importance. The tributary territory appears to be largely cut-over timber land with a small agricultural development. The only industry of importance along the line is an oil mill at Grand Ecore. The abandonment of this portion of the road would necessitate the hauling of the product of this mill to the Texas & Pacific Railroad at Natchitoches, a distance of 4 miles, or to the Louisiana Railway & Navigation Company's railroad at Hagen or Campti. There is a public gravel road from Grand Ecore to Natchitoches and to Campti. The town of Chestnut, at the northern end of the line proposed to be abandoned, is served by the Louisiana & Arkansas Railroad, and Natchitoches, at the southern end, is served by the Texas & Pacific. The territory between Chestnut and Natchitoches is traversed by the Louisiana Railway & Navigation Company's railroad, which crosses the Louisiana's railroad at Hagen. If the line south of Chestnut were abandoned the maximum distance to a railroad station from any point in the tributary territory would be about 6 miles.
>
> "It appears that the revenues derived from the traffic on this part of the line have never been sufficient to pay the costs of operation. The receiver states that the gross revenue from the

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[1] 71 I. C. C. 389, 1922.

> line south of Chestnut for 1920 was $18,909.10, and that the operating expenses were $57,501.70. There does not appear to be any prospect that sufficient traffic could be developed to make this part of the road self-sustaining.
>
> "Recently the earnings of the line north of Chestnut have materially increased because of the oil developments at Homer, La., and Haynesville, La. It is stated that this part of the line can be operated at a small profit, but that operation of the line south of Chestnut would accomplish the wreck of the entire railroad, as the operating revenues of the road as a whole will not pay its operating expenses. Efforts to find a purchaser of the road as a going concern have been futile."[1]

Permission to abandon granted.

IV. Application to abandon branch of Louisville and Nashville Railroad from West Point to the end of the line at Pinkney, Tennessee. Length of track, 1.76 miles.

> "The country traversed by the line is described as rolling timbered land. There are a few small farms located along the line, but the agricultural development has been unimportant. The principal traffic on this branch has been iron ore, but there has also been a considerable movement of forest products. It appears that approximately 2,000,000 tons of iron ore have been shipped over that portion of the branch which it is proposed to abandon. Estimates introduced by the protestants tend to show that there are more than 2,000,000 tons of commercial ore still in the ore beds in the vicinity of Pinkney. No ore has been mined since 1915. This, it is stated, was due principally to the fact that some owners of furnaces in that section had their own ore beds from which to draw a supply and others were not willing to contract to take ore for a time sufficiently long to induce the owners of the mines to begin operations. The applicant concedes that the iron industry is seriously depressed at the present time. However, it appears that in the near future the furnaces in this territory will be dependent upon the Pinkney ore beds for their supply. Protestants state that if they are unable to sell their ore beds, they expect to buy a furnace and smelt their own ores. The proposed abandonment would cause

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[1] 70 I. C. C. 392, 1921.

large damage to these mining properties, as it would disconnect the mines from the railroad by a distance of 1.7 miles.

"For the five years ending December 31, 1920, operating revenues of that portion of the branch which it is proposed to abandon, as stated by the applicant, were $1,597.65, and the operating expenses are given at $13,259.41. For the year 1920, it is claimed that the operating revenues were $329.51, and the operating expenses $3,049.33. Applicant estimates that the proposed abandonment would enable it to effect an annual saving of $5,531. All these estimates are based upon a pro rata mileage basis. The record shows that 248 loaded cars were shipped from Pinkney in 1920, all of which moved to destination over the lines of the applicant. In September, 1921, the last month for which statistics were available at the time of the hearing, 38 cars of wood and lumber were shipped from Pinkney. It appears that the applicant obtained a long line haul on most of this traffic. It is claimed by the protestants that the abandonment of this piece of track would destroy the lumbering industry near Pinkney, as it would be impracticable to haul to West Point because of the grades on the dirt roads.

"It appears reasonably clear that the proposed abandonment would preclude the possibility of the further development of the ore beds in the vicinity of Pinkney, would tend to destroy the lumbering industry at that point, and would deprive a considerable community of the benefits of railroad service. The results of operation of that portion of the branch which it is proposed to abandon, when reflected in the accounts of applicant's system as a whole, are not such as to require the granting of the relief prayed for, in view of the showing made as to the public need for the service."[1]

Permission to abandon refused.

These illustrations are perhaps sufficient to suggest that most of the applications for withdrawal of service made to the Interstate Commerce Commission are evidently the result of mistakes in original location or of changes in conditions which have destroyed the usefulness of railroads which once were in a position to render service. Following principles already explained, the Commission does not attempt to refuse to permit a railroad to withdraw entirely from the business of transportation. On the other hand, it will not allow a partial withdrawal solely on the ground of unprofitableness, although the fact that a line of railroad does not pay expenses may tend to show that public convenience and necessity do not require it to be kept in operation.[1]

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[1] 71 I. C. C. 225, 1922.

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[1] In the Matter of the Duluth & Northern Minnesota Ry. Co., 71 I. C. C., 795, 799, 1922.

CHAPTER XVIII

THE PROBLEM OF PRICE-FIXING—EQUALITY OF CHARGES

The Problem of Price-fixing

The problem of price-fixing for the transportation service is one which confronts railroad and street railroad, automobile, airship, and waterway alike. It has two aspects. One relates to the total revenues which the transportation agent shall collect for its services; the other to the particular rate or charge which shall be levied for a particular operation. If total revenue is too high or too low, the persons who make use of the community's transportation apparatus pay too much or too little for the benefits they receive. If the price of one service is too high or low relative to the price of another service, even though the total revenue collected is reasonable, then injustice is done, and, what is more important, the production processes of a country become distorted and the effort incident to production is increased.

Scientific Study of Rates Only Recently Undertaken

Historically, at least in the United States and in England, transportation was first undertaken by business organizations which differed only slightly from the organizations that supplied groceries and meat and clothing. Although, as we have seen, public opinion working through the common law imposed unusual liability in the case of loss or damage to goods or persons intrusted to the care of common carriers, and although the duty of charging reasonable rates was made a part of the common-carrier obligation, there was little scientific study of price-fixing. Even after the advent of railroad commissions at a much later date, the control which was exercised by public authority limited itself largely to comparison of one rate with another, to the establishment of a rough correlation between high and low costs of operation and high and low rates, and to some reference to the ability of the shipper to pay the charges which the carrier required.

Equality of Rates

The simplest statement which can be made concerning transportation rates is that carriers should treat all alike who apply to them for service. This is the rule of the common law for all common carriers and is the principle laid down by statute for our railroad lines. Unequal treatment of patrons by a common carrier is known as "discrimination between persons."

Difference Between "Personal" and "Local" Discrimination

We have made use of a similar phrase, "discrimination between localities," in an earlier chapter. The obvious difference between the two phrases is that discrimination between localities refers to differences in the rates or service afforded individuals in different towns, whereas discrimination between persons refers to differences existing between persons in the same town. The contrast implied in these definitions is not merely formal; it is fundamental. The type of cases involved in the one group is different from that in the other, while the policies to be applied are much more matured in the case of personal than they are in the case of local discrimination. The full extent of the difference will appear as the discussion proceeds.

Rates Need Not Be the Same to All

It is not necessary, in order to avoid personal discrimination, that a carrier shall quote the same price to all, but it may not prefer one person to another for reasons inconsistent with the public welfare. Differences may not, that is to say, be arbitrary, or merely reflect the view of the carrier and of a favored shipper without regard to the larger equities involved.

Let us illustrate this principle by examples drawn from recorded practices of the railroads:

Wholesale Principle

A carrier may not reduce its rates upon quantity shipments, at least for quantities beyond the carload, below its rates for smaller amounts, without becoming guilty of discrimination. There are many instances in which carriers have attempted to offer such discounts and in which the rule has been clearly laid down. Thus, in United States *v.* Tozer, the railroad charged 34 cents per barrel for hauling each of two barrels from Hannibal, Missouri, to Helper, Kansas, as against a rate of 46 cents for a single barrel. This was held to be illegal.[1] In the Anaconda Mining Company case there was a difference in rate between two kinds of coke, one of which ordinarily moved in carloads and the other in trainloads. The rate from the ovens in West Virginia and Pennsylvania to Chicago was $2.65 per ton on the first sort, and $2.35 per ton on the second.[1]

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[1] U. S. *v.* Tozer, 39 Fed. 369, 1889.

In a leading case decided in 1882 the evidence showed a regular railroad rate from Salineville to Cleveland, Ohio, of $1.60 per ton of coal. The railroad offered a rebate of from 30 to 70 cents per ton to all persons shipping 5,000 tons or more during the year.[2]

One of the first cases which the Interstate Commerce Commission had to decide was one in which a New England carrier offered a discount of 10 per cent of the rate to any person on the line of its road who should receive consignments of 30,000 tons of coal or more at any single station in the course of a year.[3] As in the previous instances, the decision was against the carrier. Still more elaborate was an older English arrangement between the Ruabon Coal Company and the Great Western Railway of England. In this case the railway began by separating the portion of its rate designed to cover terminal expense from that designed to cover the line haul. The latter was, except for small quantities, the same per ton per mile whatever the quantity shipped. The former varied as follows:

When the freight paid by the Ruabon Coal Co. to the Great Western Railway Co. exceeded per year:	The terminal charge was:	
£	s	d
40,000	0	3
30,000	0	6
20,000	0	9
15,000	1	0
10,000	1	3
5,000	1	6
Small quantities	1	6

In addition to the arrangements just described, the Ruabon Company undertook to send sufficient coal over the railroad's line to points more than 100 miles from the colliery, to produce for the railway a gross yearly revenue of £40,000 per year. After one year the supply of coal was to be further increased so as to yield the railroad £60,000, providing the additional coal could be sold in London, and after two years another increase was to bring up the railroad earnings from Ruabon coal to £80,000. When the railroad revenues had become £60,000 the freight rate was to be reduced 3d. per ton. When they were £80,000 the reduction was to be 6d.[1]

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[1] Anaconda Mining Co. *v.* C. & E. R. R. Co., 19 I. C. C. 592, 1910.

[2] Hays *v.* Pennsylvania, 12 Fed. 309–15, 1882.

[3] Providence Coal Co. *v.* Providence & Worcester R. Co., 1 I. C. R. 363, 1887.

In all of these cases a distinction should probably be made between instances, as with the carload rate, where the reduction in price was designed to increase the size of the unit of shipment, and instances such as the Providence and the Ruabon examples, where the purpose of the concession was quite as much to increase the number of shipments as to affect their average size. In passenger traffic the same contrast is presented by the party ticket, good on a single journey for a party of ten or more, and sold at a reduced rate to groups of that size,[2] and the mileage ticket, which one person can use repeatedly until the ticket is exhausted. The excursion rate, which is sometimes good upon a single train only and sometimes is usable on any train during a stated period, resembles alternatively the party rate or the mileage ticket type.

Objections to Quantity Discounts

American courts and commissions have generally approved of reduced rates for quantity movements of passengers, whether in the form of mileage, excursion, party rate, or commutation tickets. There is not much danger of abuse in the case of passengers, nor are passengers directly competitive with each other as freight may be.

The tolerance extended to passenger arrangements has not, however, been extended to freight shipments, beyond, at least, the level of a carload rate. This is, perhaps, for two reasons.

In the first place, it is not certain that a railroad receives a consideration for the concession which it makes when it accepts a large quantity of freight for a lower price per 100 pounds than it exacts for a smaller quantity. It may be cheaper for a carrier to handle twenty cars between Chicago and New York for one person than to handle twenty cars for twenty persons, but the economy is not inevitable, and the railroad can fairly be asked to prove its case. Nor is there much basis from which to estimate the amount of the saving, if saving there be.

What is still more important is the fact that quantity discounts favor the large shipper against the small. In the Providence coal case, indeed, there appeared to be only one shipper who was in a position to take advantage of the railroad's offer. To what extent a large company may legitimately exert its strength in competition with smaller rivals is a question to which neither economist nor government official is yet prepared to give an answer. American courts, however, declare that a large corporation is not to be allowed to force or to buy any better treatment upon the railroads of the country than is enjoyed by the small producer.

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[1] Nicholson *v.* The Great Western Railway Co., 1 Ry. & Canal Traffic Cases 121, 1858.

[2] In the Matter of Passenger Tariffs, 2 I. C. R. 445, 1889; I. C. C. *v.* B. & O. R. R. Co., 3 I. C. R. 192, 1890; *Ibid.*, 145 U. S. 263, 1892.

"Capital," said Judge Baxter of the United States District Court in a leading case, "needs no such extraneous aid. It possesses inherent advantages, which cannot be taken from it. But it has no just claim, by reason of its accumulated strength, to demand the use of the public highways of the country, constructed for the common benefit of all, on more favorable terms than are accorded to the humblest of the land; and a discrimination in favor of parties furnishing the largest quantity of freight, and solely on that ground, is a discrimination in favor of capital, and is contrary to a sound public policy, violative of that equality of right guaranteed to every citizen, and a wrong to the disfavored party, for which the courts are competent to give redress." [1]

Competition

Most cases of discrimination between people are due to railroad competition, not to attempts to recognize differences in the cost of handling business received from different shippers. Railroad competition leads directly to rate-cutting. Sometimes the cuts are open and are extended to all who may apply; sometimes they are secret, and only a few shippers take advantage of them. Open rate cuts lead to rate wars—secret cuts produce discrimination. It is with the second type that we are concerned in this chapter.

Railroad companies prefer secret to open cuts in rates because the former produce less effect upon railroad revenues. A carrier may, that is to say, continue to charge shipper A the old rate, while shipper B enjoys the benefit of a new and reduced charge. Moreover, secret cuts are better adapted to the purpose of attracting traffic from a rival line. There is little advantage in reducing rates if one's competitors adjust their charges to correspond, for in such a case the relative position of competing companies remains the same; the only difference is that the struggle is renewed upon a different level of rates. Doubtless changes in rates cannot long be concealed, but carriers hope to retain a comparative advantage long enough to make their sacrifice worth while.

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[1] Hays *v.* Pennsylvania, *sup. cit.*

The next following pages present some of the better-known methods which railroads have employed during the last forty or fifty years when they have desired to favor one shipper against his fellows for competitive reasons in a secret way.

Free Passes

A form of favoritism which has had some vogue upon American railroads consists of the granting of free passes to favored shippers in order to hold their business from competing lines. In Great Britain railway companies have long followed the practice of issuing to traders who send large yearly consignments of goods by rail, tickets for use by their employees at rates lower than ordinary season tickets. The conditions under which tickets are issued are largely standardized, and the principle involved seems to be approved by public sentiment.[1]

In the United States, the equivalent practice is that of granting passes. In most cases, a pass saves the recipient more money than it costs the railroad, and so passes are a cheap form of currency for the railroad to employ in proportion to the benefit received. On the other hand, the abuse of passes involves a considerable sacrifice of revenue, while in so far as passes are given to some shippers and not to others they produce objectionable discrimination.

"I would recommend," wrote a freight agent in the Middle West to his superior, "in order to treat Mr. ——, General Superintendent, —— Coal Co., without discrimination and place him on an equality with other producers of coal on our line, that he be given time pass good between ——, Chicago and Danville. From present indications they are in shape to put out something over one hundred cars of coal per month, which I think entitles them to transportation recommended."

Passes were at one time freely issued in the United States. At certain times and places their abuse amounted to a scandal. At present the practice is not only limited by the laws of many states, but it is controlled in detail by the following section of the Act to Regulate Commerce:

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[1] Ministry of Transport, Report of the Rates Advisory Committee on the Interim Revision of Railway Rates, Tolls, Fares and Charges. July, 1920, British Sessional Papers, vol. xxiv, 1920. Cd. 857.

> "No common carrier subject to the provisions of this Act shall, after January first, nineteen hundred and seven, directly or indirectly, issue or give any interstate ticket, free pass, or free transportation for passengers, except to its employees and their families, its officers, agents, surgeons, physicians, and attorneys at law; to ministers of religion, traveling secretaries of railroad Young Men's Christian Associations, inmates of hospitals and charitable and eleemosynary institutions, and persons exclusively engaged in charitable and eleemosynary work, to indigent, destitute, and homeless persons, and to such persons when transported by charitable societies or hospitals, and the necessary agents employed in such transportation; to inmates of the National Homes or State Homes for Disabled Volunteer Soldiers, and of Soldiers' and Sailors' Homes, including those about to enter and those returning home after discharge; to necessary caretakers of live stock, poultry, milk, and fruit; to employees on sleeping cars, express cars, and to linemen of telegraph and telephone companies, to Railway Mail Service employees, post-office inspectors, customs inspectors, and immigration inspectors; to newsboys on trains, baggage agents, witnesses attending any legal investigation in which the common carrier is interested, persons injured in wrecks and physicians and nurses attending such persons: *Provided,* That this provision shall not be construed to prohibit the interchange of passes for the officers, agents, and employees of common carriers, and their families; nor to prohibit any common carrier from carrying passengers free with the object of providing relief in cases of general epidemic, pestilence, or other calamitous visitation."

The list of persons to whom passes may be issued has been extended since 1906 to include, in addition to the above, officers, agents, employees, and their families of telegraph, telephone, and cable lines, members of National Guard organizations traveling to and from joint encampments with the Regular Army, and accredited agents and officers of the Post Office Department. There may be some question as to whether common carriers may properly be asked to supply free transportation to all the persons enumerated, but the law is permissive only, and the important thing to observe is that the list does not include shippers of freight, and so prohibits the form of discrimination with which this section is concerned.

Rebates

The rebate has become notorious in the United States, because it has been a method for meeting the pressure of competition in a semi-secret way. Strictly speaking, to grant a rebate is merely to repay to a shipper a portion of the rate which he has in the first instance paid for the transportation of his freight. It may or may not be true that the balance which the railroad retains constitutes a fair compensation for the railroad service, and so one cannot say without additional information how far the railroad has lost by the transaction. But rebates are objectionable in railroad work for the reason that they represent a return to the practice of individual bargain as contrasted with a one-price system of rate-making, making discrimination easy if the carrier wishes to indulge in it. Moreover, rebating involves departures from the rates which railroads in the United States publish and file with the Interstate Commerce Commission, and so is directly contrary to statute law.

There are probably two reasons why railroads have preferred to charge a high rate and repay a portion of it, rather than to charge a lower rate in the beginning.

In the first place, it is easier to keep a concession concealed when the published rate is actually collected, because the shipping papers, such as the bill of lading, the way bill, and the freight bill, bear the published charge, while the partial repayment of this charge to the shipper is known to few persons, even of those in the railroad's employ.

Another reason is that the rebate lends itself to the system of exclusive contract. An exclusive contract is an agreement under which a shipper gives his entire business to some one carrier for a certain period in return for a reduction in rates. Such a contract was that concluded in the 'seventies and early 'eighties between the Southern Pacific Railroad and Pacific coast shippers. At this time the Southern Pacific was anxious to meet the competition of the water route between San Francisco and New York in the way least expensive to itself. To do this it examined the books of shippers to determine the exact cost in individual instances of shipping over the water lines. Having learned shipping costs, the Southern Pacific then offered a rail rate which made the advantages of shipping by rail at least as great as those of shipping by sea. These low rates were accorded only to persons who would agree to ship nothing by water and everything by rail. This was the exclusive contract feature.

The system was administered by rebate, and violation of the contract made it impossible for the shipper to collect his rebate. Since no rebate was paid upon any business until the expiration of the period for which the contract was concluded, the position of the railroad was secure.[1]

The common law does not permit common carriers to enter into exclusive contracts, and the fact that rebates facilitate arrangements of this type is a strong argument against the practice of rebating.

Changes in Published Rates

Without allowing rebates, railroads may discriminate effectively by means of advances or reductions of published rates. If changes in rates are made upon short notice, and a few but not all shippers have advance knowledge of what is to be done, the shippers who are forewarned will have an advantage over other shippers who are not informed. They will be able either to delay their shipments in order to take advantage of a promised reduction in rates, or to hasten them in order to anticipate an increase. And they will be able to conclude contracts for future work with a precision and confidence which less favored persons cannot possess.

Moreover, rate changes may be so arranged in point of time as to benefit particular businesses.

How this may work was shown in 1892, when complaint was made of discrimination in favor of the Standard Oil Company. It was then alleged that the Central Pacific Railroad, running from Ogden, Utah, to Sacramento, California, was lowering oil rates from $1.25 per 100 pounds to 82½ or 90 cents when the Standard Oil Company desired to make shipments from Eastern refining points to the Pacific coast, the rates being subsequently raised when the shipments had been completed. A letter to the vice-president of the Standard Oil Company, bearing upon an episode of this sort, written under date of December 4, 1888, got into the public press, and seems to establish the fact that transactions of this nature were going on. The letter follows and is self-explanatory:

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[1] Daggett, *History of the Southern Pacific*, chap. xiv.

"San Francisco, December 4, 1888

"W. H. Tilford, Vice-President, Standard Oil Company,
26 Broadway, New York.

"Dear Sir:

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"I herewith hand you copy of a letter I have just received from Mr. ———, Assistant General Freight Agent of the Southern Pacific Company, this city. This letter I interpret to mean the 90-cent rate is for us to stock up from time to time, and that the $1.25 rate will be in effect whenever we may desire. This $1.25 rate is what Mr. ——— refers to in the latter portion of his letter, as my offer of 90 cents to Mr. Stubbs was on condition that he has the rate of $1.25 put into effect when we might ask him. This letter also reads as if the 90-cent rate and the $1 rate was to be put in effect January 1st. No doubt Mr. Stubbs was unaware that we were stocked up at the present rate of 82½.

"The Transcontinental Association adjourned at Chicago yesterday, and I understand that Mr. Stubbs is now on his way home. I will see him on his arrival here, and if Chairman Leeds of the Transcontinental Association has been notified to put the 90-cent rate in effect January 1st I will have the same corrected by wire and the $1.25 rate put in. As soon as Mr. Stubbs reaches home I will telegraph you whether it is intended that the 90-cent rate should be put in effect January 1st or the $1.25.

"Yours truly,
E. A. Tilford."[1]

Personal discrimination by means of sudden changes in open rates is now impossible because the Act to Regulate Commerce now requires 30 days' notice of all changes, either up or down. Moreover, the Interstate Commerce Commission has the power to suspend changes in rates for 150 days, and may be relied upon to exercise this power when it has reason to believe that a change will work discrimination or be otherwise improper.

Payments for Property or Services Supplied by Shipper

Another type of discrimination sometimes occurs through payments to shippers for services rendered in connection with transportation.

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[1] Daggett, *History of the Southern Pacific*, pp. 244–5.

Such payments are not necessarily discriminatory or illegal. They become so only when excessive, or when the shipper is compensated for some service when it is no part of the duty of the carrier to perform.

Private Cars

Payment for the use of a freight car is payment for one form of service.

One of the earliest complaints with respect to private cars originated with a New York dealer in live-stock back in 1890. This gentleman was accustomed to buy cattle in the West and to ship them to New York. He complained of an arrangement between the railroad and one of his competitors, the firm of Schwarzchild & Sulzberger, under which this firm supplied yard facilities at New York for cattle which were consigned to it, and also, through a company organized for the purpose, supplied 250 stock cars for the loading of its live-stock. The carrier (Delaware, Lackawanna and Western Railroad Co.) paid Schwarzchild and Sulzberger 3½ cents per hundredweight of cattle passing through for the use of the yardage facilities, and for the use of the stock cars a mileage allowance that amounted to $13.71 per round trip between Chicago and New York. The yardage money went directly to the parties mentioned, while the mileage payments were made to a so-called express company which Schwarzchild & Sulzberger controlled.

Speaking of this arrangement, the Interstate Commerce Commission said:

> "The mileage paid by the railroad companies pursuant to the contract as compensation for the use of the cars, from September 1st, 1888, to September 1st, 1890, was $205,582.68. The entire expenses of the Express Company, including car repairs and salaries of its officers and manager, for the same period, were $34,050.48, leaving a net profit of $171,532.20. To this must be added the yardage charge paid S. & S. The amount of this is not shown by the testimony, but at three and one-half cents per hundredweight for a carload of 22,000 pounds it amounts to $7.70 per car, and if the shipments amounted to 100 carloads per week it amounts to $770 per week, or $40,040 per year. . . .
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> "To put the matter in another form, the effect may be looked at upon a single carload shipment. The car mileage for the round trip of a car is $13.71. The yardage paid is $7.70—total, $21.41.

> Assuming a round trip to be made in a week, the interest on the cost of the car for that period at 6 per cent is 72 cents, leaving a net profit of $20.69. This represents substantially the advantage S. & S. receive over other shippers on a single carload shipment, and they either have so much more profit if their cattle are sold at the market price, or they can sell at a correspondingly lower price than their competitors who are not so favored, and command the market."[1]

Shippers still frequently build cars for the transportation of special types of commodities. Tank cars, refrigeration cars, and coal cars are illustrations of this practice. A shipper who owns cars is more likely to have cars at his disposal when he needs them than a shipper who relies entirely upon the railroad, while the cars are also more likely to suit his special requirements.

But while a shipper may build cars and may even rent them to the railroad for a price, his revenue from this source may not exceed a reasonable return upon his investment. He may not, directly or indirectly, secure a reduction in rates as a result of his car ownership, nor may he ask for special service except in the respects mentioned. What is true of railway cars is also true of other railroad facilities.

Teaming Allowances

St. Louis and East St. Louis are, respectively, upon the western and eastern banks of the Mississippi River. In 1905 the rates to Western points were the same from either town. Not only this, but shippers were allowed to deliver freight to a transfer company at East St. Louis, if they found that method quicker than delivery to the railroad, whereupon the transfer company teamed the consignment across the river and delivered it to the railroad upon the St. Louis side. The teaming cost the shipper nothing, but the railroad paid the transfer company 5 cents per 100 pounds for this service.

The Simmons Hardware Company was a large firm with teams and warehouses in both St. Louis and East St. Louis. In 1905 the Simmons Company asked to be allowed to team its own westbound freight across the river, and to receive the 5 cents per 100 pounds formerly paid to the transfer company. To avoid difficulty, the Simmons Hardware Company incorporated its teams into an organization known as the Eclipse Transfer Company. Henceforth the Eclipse Transfer Company received consignments from the Simmons

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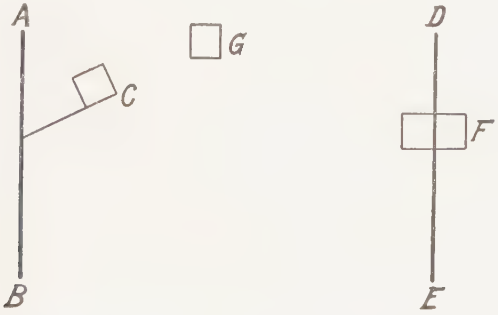
[1] Shamberg *v.* D. L. & W. R. R. Co., 3 I. C. R. 502, 18. 19.

Hardware Company at East St. Louis, transported them to the railroad depot at St. Louis, and received 5 cents per 100 pounds from the railroad for the transfer.

This arrangement, the Interstate Commerce Commission pointed out, was unfair to other shippers. According to the Commission, it was a departure from the published tariff, a rebate, and a discrimination in favor of the Simmons Hardware Company as against competitors who drayed their goods from warehouses to depots at their own expense.[1] The plan certainly had elements of unfairness, and the Commission wisely ordered it discontinued.

Wight v. United States

A clear difference in attitude toward concessions based upon competition is shown by comparison of the well-known case of Wight *v.* United States, decided by the United States Supreme Court in 1897,[2] and a report of the English Rates Advisory Committee to the English Minister of Transport in 1921. The Wight case arose under a clause in the Act to regulate Commerce which specifically forbade a carrier to charge one shipper less than another for the transportation of a like kind of traffic under similar circumstances and conditions. The litigation concerned a teaming allowance in the city of Pittsburgh. The facts are illustrated in the following diagram:



In the above diagram, the lines AB and DE indicate two competing railroads running into Pittsburgh. F is a freight house belonging to Railroad DE, and C and G are two privately owned warehouses, one located upon a spur of the railroad AB and the other located in the city of Pittsburgh but not upon any railroad line.

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[1] In the Matter of Divisions of Joint Rates, 10 I. C. C. 661, 1905.

[2] 167 U. S. 512, 1897. See also Richmond Chamber of Commerce *v.* Seaboard Air Line, 44 I. C. C. 455, 1917.

The favored shipper in the Wight case was a man named Bruening, who had a beer warehouse at C, and who, because of this advantageous position, received his freight without the necessity of paying a drayage charge. In order to share in Bruening's traffic, railroad DE offered, if Bruening would ship over its line, to team his freight across the city of Pittsburgh from F to C without charge, thus making the same delivery at C as railroad AB was already prepared to make, and at the same expense. Later, Bruening, who had accepted the offer, proposed that he should do the city hauling himself, and that railroad DE should pay him 3½ cents per 100 pounds to cover the expense. This was done.

The rate on beer from Cincinnati to Pittsburgh was 15 cents, whether freight moved over AB or DE. But under the arrangements between Bruening and carrier DE, Bruening enjoyed an advantage over the owner of a warehouse located as was the warehouse at G. For G had to pay 15 cents and accept delivery at F, while Bruening paid only 15 cents less 3½ cents, or 11½ cents, for delivery at F, the difference being used to cover the teaming cost to C.

The discrimination in Bruening's favor was defended upon the ground that Bruening's warehouse, by reason of its location, had the benefit of competition. This made conditions, it was said, dissimilar at C from those at other warehouses, such as that at G, and justified a lower rate to Bruening than was given to his competitors.

The United States Supreme Court ruled, however, that railroad rates must be the same to all unless conditions were dissimilar, and further, that the presence or absence of competition did not make conditions dissimilar in any sense which would justify a difference in rate between two persons shipping a like commodity from the same point of origin to the same city of destination.

Report of the English Rates Advisory Committee

This report was one of several dealing with the revision of English railroad rates after the World War. The English Committee, in the course of a discussion of services which English railways were rendering to traders either free or at a nominal charge, mentioned the following types of service:

> "1. Where traders have a private siding connected with one of the railway companies the other railway companies cart the goods of the trader to and from the company's nearest railway station

free of charge for collection or delivery, and also pay him on such traffic any siding rebates or allowances that he would have received had the traffic passed over the siding. There are 53 of such sidings. . . . In addition, a railway company with whose line a private siding is connected carts goods to and from parts of the traders' works which are not adjacent to the siding from and to their stations without charge for collection or delivery, and other companies follow suit. This practice formerly existed in other parts of the country but has been abolished except in these districts.

"2. At certain public wharves upon the canals the railway companies collect or deliver goods (as the case may be) usually by boat, as if such wharves were stations of the railway companies, making no charge for such collection or delivery, or for loading and unloading the barges, the traffic being actually charged at the rate applicable at the station nearest to the public wharf, and where the rates are C and D a rebate being allowed. There are 30 of such public wharves, . . . in some cases private works of the traders with canal frontage being treated as public wharves and in other cases works in the neighbourhood not actually fronting on the canals receiving similar privileges.

"3. Where a trader has a shed for potatoes at a station of one of the railway companies, the other railway companies collect or deliver potatoes at such shed without making any charge for such collection or delivery. There are six of such potato sheds. . . .

"4. Where anchors or chains are sent at C and D rates from the works of a trader the railway companies convey the same to one of the three test houses at Cradley, Netherton and Tipton Basin for the purpose of being tested, and after they have been tested collect them and forward them to their destination, making no further charge than would be made if the carriage had been from the works of the trader to the ultimate destination without interruption, or from the group in which the test house is situate. Where the goods are sent at S to S rates a charge is made for delivery to the test houses, but they are collected there after test without charge.

"These concessions appear to have arisen out of the competition between railways and canals, or between railway companies themselves, and have resulted in some cases in the traders securing free boatage or cartage over distances amounting to from three to five miles, or even as much as eight miles when their

> works have been distant from the railway station of one of the companies.
>
> "The railway companies estimate that the withdrawal of these concessions to the traders will effect a saving to the railway companies of £80,950 a year." [1]

It will be observed that three out of the four instances listed by the English Committee fall within the rule of the Wight case, the fourth instance being analogous to a transit rate. The "Wight" rule is nevertheless not applied in England, and the Committee accordingly advised that the railways should be left free to act, at least until a pending general revision of rates came into force, when the matter could, if necessary, be reconsidered.

It is evident that the recommendation of the English Rates Advisory Committee represents a point of view which differs from that embodied in decisions of the Supreme Court of the United States.

Elevation Allowances

The so-called elevation of grain is a process by which grain is unloaded from wagons or railway cars, taken into a warehouse, cleaned, graded, stored, and subsequently redelivered, perhaps for local consumption and perhaps for further transportation. Elevation greatly facilitates trading in grain, and is also convenient for the railroad, since it allows the consolidation into heavier carloads of small consignments received at country stations. For this reason, railroads sometimes pay part or even the whole cost of elevation. The practice has some reasonable basis, but it may easily lead to discrimination.

The propriety of elevation allowances has been before the courts and the Interstate Commerce Commission in a number of cases.

In a leading case in 1904, it appeared that the Union Pacific Railroad desired to have all of its grain cars unloaded into elevators at the Missouri River, partly to keep these cars upon its line and partly to secure a heavier average loading per car by a subsequent reloading. The company accordingly conveyed land in Council Bluffs and Kansas City to a man named Peavey, and agreed to pay Peavey, if he would construct a grain elevator, the sum of 1¼ cents per 100 pounds of grain passing through the elevator. Peavey was an extensive buyer and shipper of grain on his own account, as well as an operator of elevators. At one time, indeed, he handled 60 per cent of all the grain shipped from Union Pacific stations. By virtue of the arrangement described, he of course received 1¼ cents per 100 pounds upon the greater part of his material. This raised the question as to whether or not Peavey was receiving a special favor.

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[1] Ministry of Transport, Report of the Rates Advisory Committee on the Interim Revision of Railway Rates, Tolls, Fares, and Charges, July and October, 1920. Part III. Fares lower than ordinary and services rendered free or at nominal charges. British Sessional Papers, 1921, vol. xvii, Cd. 1148.

In 1904 the Interstate Commerce Commission considered the Peavey contract, and pronounced it legal.[1] The Commission said that the amount of the allowance given Peavey was not unreasonable, and the fact that Peavey derived incidental advantages from the arrangement, as he certainly did, was not sufficient to justify denunciation of the contract.

In 1907, the Commission had so far changed its view as to cut down Peavey's allowance to ¾ cent per 100 pounds, upon the ground that this amount would cover the bare cost of elevation and that no profit should be allowed.[2]

The following year it declared even the reduced allowance to be illegal. The allowance had meanwhile been extended to all elevators at Omaha, and not merely to Peavey & Co., but the payments still discriminated in favor of shippers who owned elevators against shippers who did not. Railroads might, said the Commission, pay for the transfer to grain from their own cars to the cars of connecting roads. But the elevation allowance did more than this.

> "If, however," [said the Commission] "the Union Pacific Company gives to the shipper over its line the privilege of securing for nothing an official weight and inspection of his carload of grain; if it issues to him a certificate by which it agrees to hold a certain amount of grain of a certain grade at the pleasure of the shipper and send that grain forward to whatever destination the shipper names, an entirely new element is introduced into the transaction. This is not an incident of transportation, nor is it performed for the benefit of the carrier. It is a part of the grain dealer's business, is for his benefit, and is of value to him. If it is accorded to one dealer and not to another, a preference in favor of the dealer who receives it arises. This service the railroad company has no right to render free when this works an undue discrimination against other shippers."[3]

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[1] In the Matter of Allowances to Elevators, etc., 10 I. C. C. 309, 1904.

[2] In the Matter of Allowances to Elevators by the Union Pacific Railroad Company, 12 I. C. C. 85, 1907.

[3] Traffic Bureau, Merchants Exchange *v.* C. B. & Q. R. R. Co., 14 I. C. C. 317, 330–31, 1908.

The Commission's order of 1908 was reversed by the courts upon the ground that the elevation allowance to Peavey & Co. covered a transportation service, that it was reasonable in amount, and that it was not made illegal by the fact that shippers like Peavey were able to have their grain inspected, weighed, cleaned, and graded in the elevator at the same time that it was stored.[1] In 1912 the Commission expressed the opinion that ¼ cent was sufficient to cover the cost of transportation elevation,[2] and three years later the carriers voluntarily discontinued all such payments at the principal cities where the discussion had taken place.[3]

Industrial Railroads

An industrial railroad is, as its name implies, a railroad owned by an industry and used, at least in part, to facilitate plant operations. A logging road running from a sawmill into the forest is such an enterprise. The trackage which connects the plant units in a manufacturing establishment is another. The industrial railroad takes on, in part, the function of a common carrier when its tracks are extended beyond the boundaries of the owning plant, and when it begins to accept traffic from outsiders. It may then become something more than a plant facility, and may both assume new responsibilities and acquire new privileges. Discrimination may occur in connection with an industrial railroad when the larger main line railroad which connects with the industrial system makes unreasonably large allowances for the services which the industrial railroad performs.

A few instances in which the industrial railroad has been used as a means of discrimination are as follows:

In the Hutchinson Salt case[4] it appeared that one of the mills of the Hutchinson Salt Company, Hutchinson, Kansas, was located between the tracks of the Atchison, Topeka, and Santa Fé Railway Company and the Chicago, Rock Island, and Pacific Railway Company. The salt company owned 4,000 or 5,000 feet of track connecting its plant with both of these railroad systems. It owned no other track.

In July, 1902, the Hutchinson Salt Company organized the Hutchinson and Arkansas River Railroad Company. This new company bought the track which had formerly belonged to the salt company. Application was then made to the Santa Fé and to the Rock Island, and these systems agreed to grant the Hutchinson and Arkansas River Railroad Company a division of 25 per cent of the through rate on bulk salt from Hutchinson to Kansas City, Omaha, etc., subject to a maximum of 50 cents a ton to all Missouri River points. The rate on bulk salt to Kansas City was then 10 cents per 100 pounds, or $2 per ton, and up to October 12, 1903, $15,301.39 had been paid as divisions.

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[1] Peavey & Co. *v.* U. P. R. R. Co., 176 Fed. 409, 1910; I. C. C. *v.* Diffenbaugh, 222 U. S. 42, 1911.

[2] In the Matter of Elevator Allowances, 24 I. C. C. 197, 1912.

[3] Grain Elevator Allowances, 34 I. C. C. 442, 1915.

[4] In the Matter of transportation of Salt from Hutchinson, Kansas, 10 I. C. C. 1, 1904.

The Hutchinson and Arkansas River Railroad Company rendered no service in return for the division which it received, except to allow the use of its track. It owned no equipment, did no switching, and issued no bills of lading. In fact, there was no mention of service in the negotiations which led up to the granting of the allowances mentioned in the preceding paragraph. The point dwelt upon was not service, but the alleged fact that large quantities of foreign and domestic salt were being sold upon the Missouri River, and that some inducement must be held out to producers if any bulk salt was to be moved from the Hutchinson field into this territory.

When we remember that the cost of manufacturing a ton of salt in Kansas in 1903 was approximately $2, not including the cost of transportation, the significance of the arrangement that has been described is clear. The Santa Fé and the Rock Island might have reduced their rates upon salt, if they had desired to help Kansas salt manufacturers to compete upon the Missouri River. Such a reduction could have been defended. But to offer a saving of 50 cents a ton to a subsidiary of one salt company, without offering the same reduction to other salt companies, was to work a discrimination which neither the law nor public policy would allow.

International Harvester Case

In the International Harvester case,[1] testimony showed that, in 1901, the McCormick Company of Chicago operated an extensive plant for the manufacture of agricultural implements. As part of this plant it had constructed and was maintaining within the limits of its grounds, 17 miles of railroad track. It used two steam locomotives and several electric motors upon these tracks in the various operations connected with its business.

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[1] In the Matter of Division of Joint Rates and Other Allowances to Terminal Railroads, 10 I. C. C. 385, 1904.

Cars were delivered to the McCormick Company by the Santa Fé system, the Burlington system, and by the Chicago Junction Railway, one of the switching lines in Chicago. These railroads sent their locomotives upon the McCormick Company's tracks in the course of delivery of cars, and performed there certain switching services which, although rendered free of charge, caused the manufacturer some congestion and embarrassment.

Being dissatisfied with existing conditions, the McCormick Company organized the Illinois Northern Railroad. The new railroad acquired, maintained, and proceeded to operate the 17 miles of track formerly owned by the McCormick Company, together with about 5 miles of track that connected the McCormick switch with the line of the Santa Fé. The McCormick Company, and its successor, the International Harvester Company, absolutely controlled the Illinois Northern, besides supplying it with a large and probably the major portion of its traffic.

In the ordinary course of business the Illinois Northern Railway now received cars from the main line railroads at Chicago, switched them 4 miles or less, and delivered them either at the McCormick plant or at one of the industries along the 5 miles of track acquired from the Santa Fé. At first it demanded and received from \$1 to \$3.50 per car from its connections for the switching service. The Interstate Commerce Commission was of the opinion, when it considered the matter, that \$3.50 was a reasonable charge. But following this, the Illinois Northern demanded that its connections allow it not a switching charge, but a division of the through rate amounting to 20 per cent of the rate on business destined to the Missouri River. Inasmuch as the rate on farm machinery to the Missouri River was \$60 per car, the payment to the Illinois Northern for its work suddenly increased from \$3.50 to \$12. The Commission found that companies like the Santa Fé and the Burlington assented to the increase demanded in order to secure traffic from the International Harvester Company. It therefore concluded that the railroads connecting with the Illinois Northern were using their relations with that company as a means of giving unlawful favors to the International Harvester Company, to whose benefit the earnings of the Illinois Northern ultimately accrued. This was a repetition of the salt case in another form.

Other Forms of Discrimination

Among other methods of discriminating between persons are the underweighing or misdescription of shipments, connived at by both parties in order to defeat the published rate, the preferential allotment of cars, free storage, excessive payments for supplies, and the extension of credit to some shippers while credit is denied to others. This list does not pretend to be exhaustive, for railroads may favor shippers at any of the numerous points where the two come into business contact, if not restrained by their own interest, by public opinion, or by the force of law.

Objections to Discrimination

During the past twenty or thirty years the public has more and more strenuously insisted that carriers must weigh the public interest in adjusting charges between their customers. The public objection to discrimination is in essence the democratic one that it deprives the individual of that equal chance for the pursuit of liberty and happiness which is conceived to be his inalienable right. It does this directly, by means of a difference in charge, and indirectly by its tendency to concentrate business in a few hands. The margin upon which success in business to-day depends is so narrow that few concerns can resist the pressure of a competitor who enjoys a constant, though perhaps a small, advantage, such as he can secure through preference in railroad rates. Discrimination also produces fluctuations in rates, interfering with the forecasting of costs that lends stability to business enterprise. And finally, by substituting the individual bargain for the fixed price it recurs to a method of marketing which even private business finds wasteful.

The view that personal discrimination by common carriers is intolerable has found repeated expression both in statute and in common law. Nor are the carriers themselves anxious to continue practices which involve sacrifices of revenue, or to run counter to a public view which their managers largely share. Cases of discrimination are to-day comparatively rare, and when found frequently result from complex arrangements, the final result of which is not always clearly perceived even by the parties most concerned.

Prohibition of Personal Discrimination in the Federal Act to Regulate Commerce

Discrimination between persons is forbidden by the laws of most states and also by federal statute. The pertinent clauses of the Act to Regulate Commerce, in addition to those already mentioned in this chapter, may be summarized as follows:

Section 1 extends the jurisdiction of the Interstate Commerce Commission to include private cars, terminal facilities, car distribution, etc. It also contains the so-called "commodity clause," forbidding a railroad to transport in interstate or foreign commerce any article, other than timber and the manufactured products thereof, manufactured, mined, or produced by it, or which it may own in whole or in part, or in which it may have any interest, direct or indirect, except articles necessary and intended for its use in the conduct of its business as a common carrier.

Section 2 declares it unlawful for any common carrier subject to the Act to Regulate Commerce to collect a greater or less sum from one person than from another for a like and contemporaneous service in the transportation of a like kind of traffic. Special rates and rebates are specially named and denounced.

Section 3 declares it unlawful for any common carrier subject to the Act to Regulate Commerce to give any undue or unreasonable preference to any person, or to subject any person to undue or unreasonable prejudice or disadvantage.

Section 6 requires carriers to file their rates with the Interstate Commerce Commission, and to keep these rates posted for public inspection. Thirty days' notice is required for a change, and no rate other than the published rate may be collected.

Section 10 declares that common carriers who grant or shippers who accept transportation for property at less than the published rate are alike guilty of misdemeanors, punishable by fine or imprisonment or both. Persons who solicit carriers for concessions are liable to the same penalty as those who receive concessions.

These provisions, together with clauses giving to the Interstate Commerce Commission authority to prescribe and inspect railroad accounts, appear to provide our chief regulatory body with sufficient power to control cases of personal discrimination in interstate and foreign commerce as fast as these cases are defined and discovered. State laws are generally modeled upon the federal statute, and the two together form a body of legislation that is reasonably complete and satisfactory so far as discrimination between persons is concerned.

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CHAPTER XIX

THE PROBLEM OF PRICE-FIXING—THEORY OF RATES

The Theory of Railroad Rates

The general obligation resting upon the common carrier requires not only equality, but reasonableness of rates. What the standard of reasonableness shall be is, however, a matter of considerable difficulty to determine. In some instances, as in the case of street railways, the rate is set in the company's charter or by municipal ordinance, and is influenced by such matters as custom, the financial condition of the street railway company, the quality of service desired, or even the denominations of the smaller coins in the national currency that are likely to be used in paying fares. In other lines, such as inland waterways or automobile transportation, the rate is controlled by the competition of other existing agencies, so that the question of independent rate-fixing assumes little importance. Probably the fullest discussion of common-carrier rates has taken place in connection with railroad service.

General Consideration Relating to Railroad Rates

The prevalent view among railroad men with regard to rates is that railroad rates are adjusted by a process of intelligent guessing so as to produce, in the long run, the greatest net revenue to the railroad which makes the rates. This view is qualified, to a greater or less degree in individual cases, by reference to the public interest, or to a level of charges which has the sanction of custom. Without attempting to dogmatize, or especially to controvert the statement just given, let us now consider in more detail a few of the facts which affect rate judgments, and some principles which the fixing of rates involves.

Free v. Nonfree Transportation

In discussing the basis of railroad charges it should be remembered that the first proposition to be established is that railroads shall charge any rate at all. Doubtless transportation companies could not continue under private management unless permitted to charge for their services, but it is not inconceivable that the people of a community should prefer to administer their railways on at least as liberal terms as they do their highways, free to all users, even though this involved government ownership and the levy of taxes to meet the expenses of maintenance. The Erie Canal and the artificially improved Mississippi River are now operated upon this basis. Even haulage expenses might be met from the proceeds of general taxation, although it is unlikely that this would be done except in very special cases.

It is altogether probable that a railroad is worth more to a community than that community pays in rates for its maintenance and operation. How much more it would be a matter of curious speculation to decide—the figure is sometimes set at two or three times the sum which the railroad earns. But there are solid reasons against the provision of free or even partially free railroad transportation by any government for its citizens. One such reason, for instance, is that a policy which requires shippers to pay for services rendered them tends to reduce waste both in the construction and in the use of transportation facilities. A second reason is that railroad rates are easier to collect than government taxes. Finally, the fact that a system of adequate railroad rates permits of private, instead of government, ownership of railroads has weight in a country which, like the United States, is convinced of the advantages of private operation and ownership of transportation lines.

Total Return to a Railroad for the Service of Transportation

If we concede without elaborate discussion that every railroad should pay its way, we then come to two additional problems:

1. How much, in the aggregate, should each railroad properly demand?

2. What should determine the rates upon particular hauls? How, that is to say, shall the burden of paying the total return which is deemed just be distributed among the different people who make use of railway facilities?

It Is to the Public Advantage to Pay As Little As Possible for the Service of Transportation

There is logically an infinite series of gradations between charging nothing at all for railroad transportation and charging the utmost which their necessities may force users of railroads to pay.

Frankly speaking, it is to the public interest to pay the least amount possible for the service of moving goods and people from one place to another. This is, indeed, true not only of the service of transportation, but also of all other services which the public buys. The less that is paid for one thing, the more is left for another. The less paid for transportation, the more remains for production, or the more time can be reserved for purely pleasurable activities. From the point of view of the general public, therefore, the smaller the aggregate revenue of the carriers the better, assuming always that the services supplied remain the same.

The last sentence in the preceding paragraph suggests, however, some important qualifications to the doctrine that the best standard of total railroad revenues is the lowest one. Whatever the aggregate railway revenue may be, it must suffice to maintain the railway plant in as good condition as the needs of the community demand, and it must cover the operating costs incurred in running this plant in a satisfactory manner. Indeed, railway revenue must do more than this, for it must also provide a surplus from which to pay individuals who invest capital in railway enterprise for the use of the capital which they so invest. Nothing short of this will render a railway system truly self-supporting. To save in rates at the expense of quality of service is like attempting to economize in one's clothing bill by buying less durable shoes, or, to use a still better illustration, it is like reducing factory costs by installing poorer machines. In either case the apparent saving will presently produce an actual increase in expenses, assuming always that the shoes or the machines formerly in use were of the quality best suited to the needs of the persons who used them.

Distribution of Railway Expenditures

As a practical matter, whether a community pays more or less for its railway service depends upon two things. The first of these is the efficiency with which the service is conducted, and the second is the price which is paid (a) for material, (b) for railway labor, and (c) for the use of capital.

According to figures compiled by the Bureau of Railway Economics, railway operating expenses in the year 1925 were as follows:

	Amount	Distribution expressed in cents per dollar of gross revenue
Labor (salaries and wages)......	$2,645,842,686	43.2
Fuel (locomotive)..............	407,263,044	6.7
Material, supplies & miscellaneous	1,157,781,779	18.9
Loss and damage, injuries to persons, and insurance..........	103,726,169	1.7
Depreciation and retirements...	224,190,995	3.6

Taxes	358,516,046	5.9
Hire of equipment and joint facility net rentals	104,108,505	1.7
Total expenses and taxes	$5,001,429,224	81.7
Total operating revenues	$6,122,509,856	100.0

Expenditures for Labor

The table just given shows very clearly that the expenditures for labor are the largest which a railroad has to make. The fact would be even more evident than it is were we to take account of the large part which the cost of labor plays in the price of materials and in determining the sums which governments find it necessary to collect in taxes.

The sums spent by American railroads for wages and salaries to their employees have been, in recent years, as follows:

Year ending	Amount	Per cent of operating revenues
June 30		
1911 *	$1,208,466,470	42.36
1912 *	1,252,347,697	43.00
1913 *	1,381,334,368	43.05
1914 *	1,381,117,292	44.17
1915 *	1,242,319,254	42.02
1916 *	1,403,968,437	40.43
December 31		
1910 *	1,506,960,995	40.83
1917 *	1,783,214,071	43.33
1917 †	1,739,482,142	43.33
1918 †	2,606,284,245 ‡	53.40
1919 †	2,828,014,440 ‡	54.97
1920 †	3,681,801,193	59.59
1921 †	2,765,218,079 §	50.13
1922 †	2,640,817,005 §	47.50
1923 †	3,004,071,882 §	47.76
1924 †	2,825,775,181 §	47.72
1925 †	2,860,607,183 §	46.72

* Railways of Classes I, II, and III, excluding switching and terminal companies.

† Class I railways only, excluding switching and terminal companies.

‡ Data for 1918 and 1919 do not cover employees of corporate organizations whose properties were under federal control. The difference between the wage figure in this table and that contained in the previous table is due to the exclusion from the earlier statistics of labor expenditures not chargeable to operating expenses, and to the inclusion of these figures in the statistics here presented.

§ In 1921, 93.65 per cent of the reported compensation was chargeable to operating expenses. In 1922 the corresponding percentage was 93.47 per cent; in 1923, 92.72

Influences Which Affect the Amount Paid in Railroad Wages

A considerable proportion of the employees of American railroads are strongly organized in four great brotherhoods—those of the locomotive engineers, the locomotive firemen, the conductors, and the trainmen. The railway shopmen have affiliated with the American Federation of Labor, although many of them at the present time are organized locally into unions coextensive with the lines of the railway systems which employ them. The level of pay of these organized employees undoubtedly reflects the bargaining power exerted by the unions.

For the rest, there are two theories which attempt to explain the level of wages which is paid or should be paid to railroad labor. The first of these proceeds on the basis of a budget in which are assembled those items which are considered by the persons who draw up the budget to be essential to the maintenance of the efficiency of railway labor, or, more generally, to the maintenance of what is called a decent or American standard of living. The second attempts to relate wages in the railroad industry to wages in other comparable lines of work. The laborers themselves are inclined, not unnaturally, to appeal to the standard of living test when the general level of wages tends to decline, and to the comparative test, or to the doctrine that wages should reflect the bargaining power of the labor group, when conditions seem ripe for a rise.

In view of the large proportion of railroad expenditures which go for the payment of wages and salaries, we may safely say that the aggregate revenue which railroads collect from the shipping and consuming public depends more upon the level of wages which the public consents to have paid to railway labor, and, incidentally, to labor producing supplies for railroad use, than upon any other element in railroad operation. If wages are high, rates must be high; if wages are low, the effectiveness of labor remaining the same, rates may be low. The question of the level of rates at any time is, therefore, in very large part, if not entirely, a question of the payments to and the standard of living of that part of the community which is engaged in railroad work. This is a social problem, but we must not forget that in the railroad industry it has a vital bearing upon the level of rates.

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per cent; in 1924, 92.87 per cent; and in 1925, 92.49 per cent. What part of the totals for earlier years was so chargeable is not known (Interstate Commerce Commission, Annual Report, 1926, p. 108).

Expenditures for Material

Railroads spend approximately three dollars in the purchase of materials and fuel for every five dollars which they invest in labor. The sum involved is, therefore, very large, although it does not represent the largest of the expenditures which the carriers have to make.

The level of payments for material depends largely upon general industrial conditions, and partly also upon the relative bargaining skill of representatives of the railroads as compared with that of representatives of the manufacturers of railroad supplies. Generalization with regard to such matters is difficult and dangerous. The presumption is that the prices of railway materials are as low as the carriers can force them. They are bought, that is to say, upon the best terms which railway purchasing agents can secure—men whose jobs depend upon their success in buying at the bottom of the market. Men acquainted with these agents are likely to credit them with average shrewdness and interest in their work. Cases of collusion between supply men and railroad men are so rare as to be negligible, although it is true in a broad way that negotiations between the two may be affected by the fact that the same men are sometimes financially interested in the railroad and in the company which supplies it. Everything points to the conclusion that the railway pays the going, and not more than the going, price for the material which it has to buy.

Railroad Purchases Largest in Times of Active Business

It perhaps deserves mention, however, that the going price for railroad material is swelled by the fact that railroad purchases are largest in times of active business when prices generally are high, and smallest during times of general depression when prices are low. Railroads buy heavily when prices are high because their income increases in periods of prosperity, and also because it is easier, then, to borrow money in order to anticipate needs of the more or less distant future. In this railroads are not unique. All types of business enterprise are apt to spend more liberally in times of rising prices, and to curtail their expenses when prices fall, uneconomical as the practice may seem to be. But the magnitude of the railroad industry, and the large proportion which its purchases bear to the total production of certain articles, gives prominence to a policy when followed by railroad managements which might escape notice in the case of less important concerns.

Payments For the Use of Capital

In the long run, and assuming that railway enterprises are continuing affairs, not to be liquidated and their assets distributed among the proprietors, the payments made by railroad companies for the use of capital invested in the railroad business must cover dividends to stockholders plus interest and rental charges paid to creditors of railroad corporations or to owners of property which railroads use.

In the year 1924, the payments to owners of railroad capital amounted to $1,074,134,181. This was somewhat more than one-third of the sums paid directly to railroad labor, and a somewhat larger proportion of the expenses for material. On an estimated valuation of $20,000,000,000, it represented a return of approximately 5 per cent.

Speaking generally, the minimum amount which must be set aside for interest, rentals, and dividends under a régime of private property is such a sum as will make investment in railway securities sufficiently attractive to owners of capital to enable railways to secure the use of private funds.

The railroads of the United States need for their development, in order to keep pace with the needs of an expanding population, an annual addition to their capital which has been estimated at from $740,000,000 to $1,000,000,000. To obtain these funds they must offer inducements comparable with those obtained in other fields into which capital may flow. The rate of return which railroads are obliged to offer may be comparatively low, for the railroad industry is relatively stable, but it should be certain, and it cannot be indefinitely reduced. Unlike the question of wages, the matter of payments to owners of capital is not, at least in current discussions, complicated by the consideration of standards of living. This is partly because the individual who owns railroad stock or bonds is not so obviously and publicly associated with the railroad business as is the railroad employee, and partly because the former is not usually dependent upon the income from his securities for his entire support.

Nature of Controversies in Recent Years

During the past generation the question of payments for the use of capital has come up in two ways. The first, and possibly the more fundamental, has taken the form of a demand on the part of carriers for increased rates in order that they may increase the payments which they have been able to make for the use of capital invested in their plant. The other class of cases has been the result of attempts by legislatures or by railroad commissions to reduce railroad rates—attempts which the railroads have resisted, at least in part, upon the legal ground that the proposed reductions would deprive them of property without due process of law and would thus run contrary to the prohibitions contained in the federal constitution.

Increases in Rates and Prices

The change in the trend of railroad rates from a steady progress downward to an equally consistent progress upward occurred in 1916. The average receipt per ton per mile on American railroads fell from .757 cent in 1900 to .754 cent in 1908, and to .719 cent in the year ending December 31, 1916. Since 1916, the average receipts per ton per mile reported to the Interstate Commerce Commission have been .728 cent in 1917, .987 cent in 1919, 1.294 cents in 1921, 1.132 cents in 1924, and 1.114 cents in 1925.

The spectacular increase of railroad receipts from an average of .719 cent per ton per mile to 1.294 cents per ton per mile in a space of five years was, of course, due to an equally spectacular change in general price levels. This change increased the amounts which carriers had to pay for supplies, and, in conjunction with the advances in wages for which they were also forced to provide, made it necessary for them to obtain a larger revenue from the shipping public. Inasmuch as the first parties to bear the brunt of increased railroad expenses were investors in railroad securities, the first action of the carriers was to ask the Interstate Commerce Commission for higher rates in order to earn larger revenues in order to be able to pay a return upon invested capital comparable to that obtainable in other lines of business. This led to a series of important Commission cases, in which the financial condition of the American railroad system was repeatedly discussed.

Applications for Increase in Earnings

The first of these comprehensive cases involving the general level of rates in the United States which grew out of the price changes of the past twenty-five years was brought in 1911 by carriers in Official Classification territory. This territory is bounded, roughly speaking, by Canada upon the north, the Atlantic Ocean upon the east, the Ohio and Potomac Rivers upon the south, and the Mississippi River upon the west. The carriers in Official Classification territory sought in 1911 a general advance in class rates, together with an increase in about one-half of the commodity rates in the territory affected. In proceedings brought at the same time, other carriers sought increase in several hundred thousand rates applying west of Chicago. The advances were defended upon the ground that the net operating revenues of the railroads in these districts had become unduly low. The Interstate Commerce Commission considered the proposed increases in two comprehensive investigations but disapproved them because the Commission did not believe that the higher rates were necessary to enable the railroads to earn a fair return.[1]

In 1914, the carriers north of the Ohio and Potomac Rivers again sought general freight increases, ranging this time from 3 to 50 per cent. Insufficiency of revenue was again the plea. The Commission now allowed part of the advances asked for, but refused to permit the rest.[2]

The following year, and in 1916, Western carriers endeavored to secure increases in rates upon selected commodities, including grain and grain products, coal, fruit, cotton piece goods, etc., etc.[3]

In 1915, the so-called lake routes to and from trunk line and New England territories applied for greater earnings.[4]

In 1917, carriers East and West and South represented to the Interstate Commerce Commission that an emergency had arisen in their operation which required prompt remedial measures. They asked and were allowed to file schedules proposing a general and horizontal increase of 15 per cent on all freight rates except upon certain designated commodities. On complaint, the tariffs in question were later suspended, but some increases were allowed.

Still again, in 1920, encouraged by new legislation, carriers in all parts of the country joined in an application for rates sufficient to increase their revenues to the figure of 6 per cent upon the aggregate value of their property. The validity of the principles for which the carriers contended was recognized by the Interstate Commerce Commission, and rates were generally increased, both on passengers and upon freight.[1] A part of the increases granted in 1920 were later taken away, upon the ground that railroad expenses had declined subsequent to the date of the advances.[2]

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[1] In the Matter of Investigation of Advances . . . in Official Classification Territory, 20 I. C. C. 243, 1911; In the Matter of Investigation of Advances . . . in Western Trunk Line, Trans-Missouri, and Illinois Freight Committee Territory, 20 I. C. C. 307, 1911.

[2] The Five Per Cent Case, 31 I. C. C. 351, 1914.

[3] Western Rate Advance Case, 35 I. C. C. 497, 1915; 37 I. C. C. 114, 1915; Rate Increase in Western Classification Territory, 38 I. C. C. 94, 1916.

[4] Rates *via* Rail-and-Lake Routes, 37 I. C. C. 302, 1915.

The last important advanced rate case considered by the Interstate Commerce Commission was brought by Western carriers who were earning less than 5¾ per cent on the value of their property and who sought, unsuccessfully, an increase in their charges.

In all of these instances, the desideratum was a standard of aggregate revenue which the carriers of the United States should be allowed to earn in order to pay such a return to investors as to enable them to bid for new capital upon favorable terms. In most instance the carriers' requests seem, in the light of later information, to have been justified, and increases in rates, as we have seen, were in fact allowed, although the Interstate Commerce Commission has always been slow to grant the full relief applied for.

Deprivation of Property Without Due Process of Law

It may be repeated that the period of the application for increased rates on the part of railroad companies in the United States corresponds roughly to the recent period of rising prices. The carriers' resistance to legislation that threatens to reduce their earnings is somewhat older, and the line of judicial decisions relating to it is even more complete.

The clauses in the Constitution on which railroads rely for protection against improper rate reductions are two:

> "Article V: 'No person shall be held to answer for a capital, or other infamous crime, unless on a presentment or indictment of a Grand Jury . . . nor shall be compelled in any Criminal Case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.'
>
> "Article XIV: ' . . . No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.' "

The significant words in the quoted paragraphs are those which protect the individual from taking of his property without due process of law. Article V refers to federal, Article XIV to state, action. It has been held by the courts that to reduce the earnings of property is to take at least a portion of the property affected, and if the reduction is too great, the courts will condemn it as lacking in due process.

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[1] In the Matter of Increased Rates, etc., 58 I. C. C. 220, 302, 1920.

[2] Reduced Rates, 1922, 68 I. C. C. 676, 1922.

Doctrine of Smyth v. Ames

There are two theoretical questions involved in every railroad case under the due-process clause. The first is as to the rate of return which shall be allowed upon railroad property. The second is as to the value of the property upon which the rate of return shall be calculated. While there is little of interest in court discussions with regard to the first of these matters, the second has been treated at such length as to justify a somewhat careful explanation.

The first comprehensive case in which the United States Supreme Court attempted to enumerate the factors which should have weight in determining the rate base upon which a railroad should be allowed to earn a fair return was that of Smyth *v.* Ames.[1] This case involved the validity of a statute of the State of Nebraska, fixing maximum freight rates to be charged upon railroads in that state. Counsel for the carriers contended that railroad earnings at the prescribed rates would be so low that they would fail to yield a fair return upon a fair value of the railroad property affected. In upholding the contention of the carriers, the Supreme Court used, with respect to the measurement of value, the following words:

> "And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates fixed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property."

Inasmuch as the standards mentioned in the Smyth *v.* Ames decision are mutually contradictory, most subsequent discussion has been devoted to the elaboration of some one or other of the points mentioned, in the attempt to show that the selected principle deserves foremost consideration in determining the base against which earning power shall be reckoned. The alternatives most dwelt upon are the following:

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[1] 169 U. S. 466, 1898.

Original Investment

The theory which requires the acceptance of original investment as a rate base is sometimes called the principal-and-agent theory. It starts with the proposition that transportation is a public service, which the community may properly provide for itself. If, instead of building its own railroads, a nation allows private investors to construct and operate transportation lines, then these private investors are to be regarded as agents of the state, and their compensation is to be fixed according to principles which govern the relations of principal and agent in other fields. More concretely, the theory implies as a logical conclusion from its premises that private investors, as agents, should be assured the customary rate of return upon all moneys spent in the construction of railroad properties for the service of the state, without deduction if the market value of these properties subsequently declines, and without increase if the market value goes up. This, the theory holds, is the fair return to be paid by the public for the use of capital in the railroad business. Special losses and special profits are for the account of the principal. The only fact which should concern the agent is the agent's investment and the normal rate of return upon capital in similar lines.

Practical Application of the Theory of Original Cost

In the practical application of the theory of original cost as a basis for rate-making, many questions naturally arise. A few of them may be referred to as follows:

1. Shall an original cost valuation be based upon the total investment in railway property under consideration, including property which has been worn out or abandoned prior to the valuation date? Or shall it be based only upon the first cost of the identical units in use. Suppose, for instance, that a section of a railroad as first laid down has been subsequently relocated. Or suppose that steam-operated locomotives, which were responsible for a part of the first cost of the property, have been replaced by electric locomotives and the old engines scrapped. Is our figure of original cost to include the cost of the old and of the new line, of the steam and of the

electric locomotives, or does it relate only to the cost of the electric locomotives running upon the relocated track?

2. At what price shall donations be taken into account? Many of our railroads have received extensive grants of land and terminal facilities. Strictly speaking, these cost nothing, and yet, if no return be allowed, the government will be in the position of taking back, at a later date, property which it once gave away, without compensation to investors who have reasonably relied upon the original government action as upon an established fact.

3. To what extent shall unnecessary and unwise expenditures be taken into the rate base? Doubtless fraudulent padding of construction accounts must be corrected, in so far as the thing is possible. But what shall be done with carriers' mistakes?

4. Are investments made from railway earnings entitled to the same consideration as investments from the sale of stocks? They are undoubtedly part of the cost of the railroad, but they represent contributions by shippers rather than contributions by owners or creditors of the railway property. Possibly a distinction may be made here between investment of the proceeds of excessive rates and investment of sums which might reasonably have been distributed as dividends. But the distinction is difficult to establish, and the propriety of it is doubtful when no question was raised at the time, either of the legality of the rates or of the legality of the earnings from which the investments were derived.

Advantages and Disadvantages of Original Investment as a Rate Base

If we leave aside these and similar questions of detail, the practical advantages and disadvantages inherent in the use of the original investment as a rate base are as follows:

The great advantage of original investment is that it secures for the community as a whole and not for private carriers separately the increment in the value of railway property which comes from the growth of population and, latterly, from the general advance in the level of prices which has occurred since the outbreak of the World War. Doubtless the railroads are in part responsible for this increment and therefore entitled to a portion of it. But they are not primarily responsible, while their strategic position, above all in our large cities, has increased the market value of the holdings of railroad corporations to an unusual degree.

The great disadvantage of the use of original investment is that in any form yet adopted in this country it has failed to give adequate protection to the carrier. The statement of the theory carries, it is true, the implication that protection to the investor is perfect. But the public has never yet, in the United States, been willing to apply the principal-and-agent theory in the case of railroad losses, although it is ready enough to use it as a justification for recapturing railroad profits.

Cost of Reproduction

Instead of accepting the view that an investor in railroad property is entitled under the constitutional provision to a fair return upon the investment which he has made, it is possible to argue that such an investor should be assured a return upon the basis of the cost of reproducing the property under consideration, not upon its original cost.

In so far as we are concerned with original cost, it is doubtless clear enough that where conditions change so rapidly as they do in industry, there can be nothing more than accidental correspondence between present value and original cost. This is true whether or not we assume that cost and value were at the beginning the same. Nor, indeed, is the case for a basis of cost of reproduction much better from this point of view. Thus a misplaced railroad will never sell for much, no matter how expensive its reconstruction may be, while the risks of competitive construction and the heavy investment required may endow an existing carrier in a strategic location with an earning power and thus a selling value far in excess of what would be expected upon a basis of reproduction cost.

It is not contended, however, by the advocates of reproduction cost as a rate base that such a cost and market value necessarily correspond. What can be said for cost of reproduction is that, with certain assumptions and under certain conditions which are often conceived of as ideal, such a cost may actually determine the price at which goods are sold. The assumptions which must be made if the conclusions which have just been stated are to hold are the following: first, that capital is liquid, and that the article which is being valued can be multiplied at no extraordinary expense; second, that competition is free. When there is no bar to production and producers are competing among themselves, prices will approximate cost, and less past or original cost than current cost, or cost of reproduction. Cost may, in this sense, be called the competitive measure of value, and the cost of reproduction theory the competitive theory of railroad valuation.

If, now, the public in a country becomes convinced that the competitive standard of values is a good one; if it feels that competitive earnings are likely to be fair and all other earnings too high or too low, such a public may seek out the cost of reproducing property in which it has an interest and declare that this figure is the amount which it will recognize, irrespective of market quotations or any other measure whatsoever. Something very much of this sort is done when the value of a railroad is measured by the cost of its reproduction. All parties concerned may appreciate that the real value of the property may be above or below what it would cost to reproduce it. But if railroads, being freely reproducible, like boots and shoes, would sell at cost, and if the ideal standard of value is that attained by the unimpeded working of economic laws operating upon freely reproducible articles, then it is possible to say that the public interest demands that the value of railroads should correspond with the cost of their reproduction, and that the public, by adopting cost of reproduction as a rate base, will take action to make certain that this correspondence will exist. Such is the theory upon which the use of reproduction cost in rate matters can be defended.

Method of Procedure in Cost of Reproduction Cases

In estimating cost of reproduction, engineers usually first determine the quantities of material of various sorts which are to be found in the railroad which is to be valued. The number of rails and ties in the track are counted, the amount and width of ballast, the telegraph poles, the cars and locomotives, the station buildings, and all other property of like sort. Then the market price for unit quantities of similar articles is obtained, as of the date of valuation, and this price, multiplied by the appropriate quantities, gives the reproduction cost of the physical properties of the road. To complete their task, engineers finally take into account so-called "intangible" factors. These intangible costs include the costs of organization and promotion, interest and deficits, during the development period of the corporation, taxes and insurance prior to the beginning of operation, and other items of this type.

Questions of Principle Involved in Cost of Reproduction Valuation

Among the theoretical questions raised in the sort of valuation which is now being discussed are the following:

1. Is cost of reproduction to be understood as the cost of an identical reproduction of the existing plant, or of a plant capable of performing the same service as the existing plant, even though not identical?

2. In determining cost of reproduction, should the conditions assumed to exist during the reproduction period be conditions as they are found at the time when the valuation is made, or should they be conditions at some other time, say at the time when the plant was first built? The first basis will yield the higher value, but it may not give a fair result.

Suppose, for example, that the presence of a railroad draws settlers to a town and that the competition of settlers with each other causes land values to increase. Shall we now, in determining the cost of reproduction of the railroad just mentioned, estimate land values as they are, or shall we refuse to take into account the effects of the construction of the line which we are valuing upon surrounding property and proceed to estimate reproduction cost on the theory that the railroad is to be built through an unsettled country under the same conditions which prevailed when the first road appeared?

Attitude of the Courts

There is very little precision in the attitude of the courts with regard to the more difficult problems of reproduction theory valuation. Mr. Justice Brandeis, in his concurring opinion in the Bell Telephone case,[1] pointed out that the use of reproduction cost was urged in 1893 in the expectation that this procedure would justify legislative reduction of railroad rates. Discussing the attitude of state railroad commissioners, Mr. Brandeis continued:

> "Evidence of reproduction costs was certainly welcomed, because it seemed to offer a reliable means for performing the difficult task of fixing, in obedience to Smyth *v.* Ames, the value of a new species of property to which the old tests—selling price or net earnings—were not applicable. The engineer spoke in figures—a language implying certitude. His estimates seemed to be free of the infirmities which has stamped as untrustworthy the opinion evidence of experts common in condemnation cases. Thus, for some time, replacement cost, on the basis of prices prevailing at the date of the valuation, was

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[1] Southwestern Bell Telephone Co. *v.* Public Service Commission of Missouri, 43 Sup. Ct. Rep. 544, 1923. See also McCardle v. Indianapolis Water Co., 47 Sup. Ct. Rep. 144, 1926.

> often adopted by state commissions as the standard for fixing the rate base. But gradually it came to be realized that the definiteness of the engineer's calculations was delusive, that they rested upon shifting theories, and that their estimates varied so widely as to intensify, rather than to allay doubts. When the price levels had risen largely, and estimates of replacement cost indicated values much greater than the actual cost of installation, many commissions refused to consider valuable what one declared to be assumptions based on things that never happened and estimates requiring the projection of the engineer's imagination into the future and methods of construction and installation that have never been and never will be adopted by sane men. Finally the great fluctuation in price levels incident to the World War led to the transfusion of the engineer's estimate of cost with the economist's prophecies concerning the future price plateaus. Then the view that these estimates were not to be trusted as evidence of present value was frequently expressed, and state utility commissions, while admitting the evidence in obedience to Smyth *v.* Ames, failed, in ever increasing numbers, to pay heed to it in fixing the rate base."

The position of the courts themselves is indicated by a summary prepared in the same case from which Mr. Brandeis's discussion is quoted, covering 363 cases from the Public Utility Reports in 1920, 1921, 1922, and 1923 (January, February). This summary shows the predominant element in fixing the rate base in the several cases:

In 5 cases: Reproduction cost at unit prices prevailing at the date of the valuation;

In 28 cases: Reproduction cost at unit prices prevailing at some date, or the averages of some period, prior to the date of the valuation;

In 12 cases: Reproduction cost at unit prices prevailing at some date not specifically stated;

In 22 cases: Reproduction cost of an inventory of a prior date at prices prevailing at that date or prior thereto, plus subsequent additions at actual cost (so-called split inventory method);

In 3 cases: Reproduction cost on basis of future predicted prices (so-called trend prices, or new plateau method);

In 102 cases: A prior valuation by the commission plus the actual cost of subsequent additions;

In 85 cases: The actual original cost (including both initial cost and additions);

In 6 cases: Original cost arbitrarily appreciated;

In 27 cases: The historical cost or prudent investment;

In 28 cases: Book cost or investment;

In 12 cases: Bond and stock capitalization;

In 36 cases: Determination and classification of method impossible.[1]

The foregoing tabulation shows that reproduction cost has not finally established itself as a rate base. Indeed, the present position of courts and commissions in this matter is highly confused, with perhaps a tendency to accept the theory of original cost as the foundation of a rate base, or some modified application of this theory, rather than the theory of cost of reproduction.

Transportation Act of 1920

The Transportation Act of 1920 contained the following clauses directing the Interstate Commerce Commission to use its authority to fix rates so as to secure to railroads a fair return:

> "In the exercise of its power to prescribe just and reasonable rates the Commission shall initiate, modify, establish or adjust such rates so that carriers as a whole (or as a whole in each of such rate groups or territories as the Commission may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures, and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation. . . .
>
> "The Commission shall from time to time determine and make public what percentage of such aggregate property value constitutes a fair return thereon, and such percentage shall be uniform for all rate groups or territories which may be designated by the Commission. In making such determination it shall give due consideration, among other things, to the transportation needs of the country and the necessity (under honest, efficient and economical management of existing transportation facilities) of enlarging such facilities in order to provide the people of the United States with adequate transportation: *Pro-*

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[1] *Ibid.*

> *vided,* that during the two years beginning March 1, 1920, the Commission shall take as such fair return a sum equal to 5½ per centum of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of one per centum of such aggregate value to make provision in whole or in part for improvements, betterments or equipment, which, according to the accounting system prescribed by the Commission, are chargeable to capital account."

Under this Act, the Interstate Commerce Commission tentatively set the value of the railroad system of the United States at $18,900,000,000, and, after the expiration of the two years, beginning March 1, 1920, it declared 5¾ per cent to be a fair return. The percentage fixed is, however, avowedly experimental, and the preliminary valuation will be revised when the Commission's labors under the Valuation Act of 1913 have been brought to a conclusion.

Summary

Whatever the details which determine the basis upon which the return to railroad capital is calculated, or whatever the principles which govern the level of wages or the prices of material, the level of rates charged by a railroad system must be sufficiently high to yield well-defined minimum returns to be applied to these three elements of expense. This is the contribution which a community will have to make to keep a railroad system going. It is the answer to the question of how much, in the aggregate, a railroad can properly demand. The further question as to how the burden of supporting a railroad system shall be distributed among those persons who use or are benefited by the railroad will be somewhat considered in the following chapter.

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CHAPTER XX

RATES ON PARTICULAR HAULS

THE theoretical problem of establishing correct rates in particular instances is simplified when the argument can assume a total railroad revenue which is accepted by all concerned as reasonable. For the task then becomes one of distribution, analogous in many ways to the problem of taxation. Just as a legislature can discuss tax schedules upon the basis of a budget, so can a traffic manager, or a railroad commission, discuss rates, if he or it can work upon the basis of an estimated volume of business involving expenditures for labor, material, and capital, which, while not fixed, still bear some relation to standards which have been agreed upon as right.

A railroad man who appreciates the necessity of finishing the railroad year with a surplus will naturally attempt to fix rates so as to cover, in the case of every shipment, the operating cost of handling that shipment, together with such a percentage of profit as will, on the expected volume of business, take care of the overhead expense. Such a policy is "natural" because it seems simple and adequate, and also because it appears to lay the burden of the costs of railroad service upon the shoulders of parties who benefit from transportation—*i.e.* the shippers. It is frequently approximated by new railroads in new districts.

Railroad service has, however, certain peculiarities which make it dangerous to rely too much upon cost figures in fixing individual rates.

One great difficulty is that the cost of handling different shipments cannot be easily segregated. This is sometimes expressed by saying that railroad costs are joint. Which is to say that on a railroad many costs are incurred at one and the same time for the benefit of several kinds of service. How much of the common cost can be charged to one service in such a case and how much to another is extremely difficult to decide.

Let us take the case of a railroad box car. Probably no other unit of equipment is so standardized and used for such a variety of purposes as a box car. It may haul canned goods, or dry goods, or kitchenware, or soap, and all of these articles may be loaded at once for an identical destination, they may be hauled by the same locomotive, pass over the same track, and arrive at the same terminal for delivery to their respective consignees.

In a case of this kind the railroad finds it very difficult to determine the expense of transporting any one commodity. The fact is that the costs of moving all the commodities loaded into a single car are jointly incurred, and while each kind of shipment may be responsible for some special expense of carting or bracing, most of the expenses are incurred for the traffic as a whole, and not for any single element of it. Costs which may be segregated, which first are incurred when a particular article is offered for transportation, and which disappear when that article ceases to move, are known as out-of-pocket costs. Rates must always be high enough to cover out-of-pocket costs. To this extent every form of railroad traffic must stand upon its own feet. But carriers cannot as definitely declare that rates upon every article must be high enough to cover the proportion of other expenses for which it is responsible, because no one can say what this proportion is. The distribution of nonallocable costs has to be discussed as a question of general policy, and there is room for debate as to what the best policy may be.

Constant Costs

Railroad costs have another peculiarity besides that of being jointly incurred for several commodities at the same time. They are, to a certain extent, independent of the quantity of traffic handled. This is expressed by saying that railroad costs are not only joint, but that they are constant—they do not increase in proportion as business grows, and they do not fall off in proportion as business declines.

According to A. M. Wellington, author of a standard treatise upon railroad location, railroad expenses may be analyzed as shown below.

Assuming a fairly prosperous line of the second grade with a business of 20,000 tons per mile and a gross revenue of $7,000 per mile, then:

	Per cent	Per mile
Gross revenue	100.00	$7,000
Operating expenses, unaffected by either alignment or volume of traffic	33.3	2,333
Operating expenses, increasing directly with considerable changes in alignment or volume of traffic, but not with trifling changes	26.7	1,867
Operating expenses, increasing directly with the less important changes in alignment or traffic	6.7	467
Total operating expenses	66.7	$4,667

Fixed charges (6 per cent on $30,000 per mile)	25.7	1,800
Total expenses	92.4	$6,467
Surplus available for dividends	7.6	$ 533

Degree of Validity of Assumption that Railroad Expenses Are Constant

The estimates which Wellington presents regarding the degree of fixity in railroad expenses may or may not be exact. Different observers, indeed, estimate the proportion of constant expenses in railroad work differently. Acworth assumes as a rough measure that half of total railroad expenses are fixed, and half vary with the traffic. If, he says, it costs x to deal with 1,000,000 units of traffic, 5,000,000 units will cost, not 5x, but $\frac{1}{2}x + (\frac{1}{2}x \,.\, 5) = 3x$.[1] Hadley, in one of the earliest discussions of the subject, put the proportion of constant expenses at 60 per cent, and Ripley, much later, estimated it at 67.5 per cent. As a matter of fact, the percentage of constant expenses upon a railroad varies at different times and places, and the exact proportions are of little importance, provided that the general fact that a substantial proportion of railroad outgo does not increase proportionally with traffic is conceded.

On this point there is little doubt, provided always that the carrier's facilities are not fully utilized before the suppositious increase in traffic takes place. It costs very little more to operate a full train than a partly loaded one, not only because fuel and labor costs do not increase directly with the traffic, but also because railroad equipment and right of way are, in either case, equally exposed to deterioration from the action of rain and frost. The salaries of general officers, and, still more, the interest upon outstanding securities, are within considerable limits unaffected by changes in the volume of business done. Over long periods and in the face of considerable fluctuations in traffic these, like all other railroad expenses, will increase as traffic grows.

Calculation of the Cost of Additional Traffic in a Particular Case

The fact that railroad costs are relatively constant brings it about that the additional expense involved in handling an additional unit of traffic may be very slight. Let us return to Wellington's illustration, and assume that the traffic of the railroad upon which he bases his figures be increased by 10 per cent. This increase may, perhaps, be considered, in the language of the table, a "less important change." If it be so classified, and if the assumptions of the table are correct, then the increase in expenses which will follow such a variation will be 10 per cent, not of the total railroad expense of $6,467 per mile, or $647, but 10 per cent of that portion of operating expense which increases directly with less important changes in alignment or traffic, or $47. A little calculation will show, moreover, that while, after the new business has been secured, the total cost will become $6,514 and the average cost per ton $\frac{6{,}514}{22{,}000}$, or 29 cents, the additional cost per unit of new business will be only $\frac{47}{2000}$, or approximately 2 cents. How far the rate upon the new business shall be fixed on the basis of the additional cost, and how far the new traffic shall be called upon to pay a proportion of the more general expenses of the railroad which existed before it was called into being, and for the presence of which it is not responsible, is a problem of policy in the solution of which cost figures offer little aid.

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[1] Acworth, *Elements of Railway Economics*, p. 55.

Bearing of the Preceding Analysis upon Rate Competition Between Railroads

It may be observed at this point that the analysis in the preceding paragraph helps to explain why radical rate reductions result from competition of rival carriers. Even though a carrier's normal costs are 29 cents a ton, and rates are adjusted accordingly, such a carrier may be able to accept new business for a great deal less than 29 cents; indeed, it may cut as low as 2 cents, and still maintain a balance between intake and outgo, provided, of course, that the 2 cents rate can be strictly limited to new traffic, and that it does not operate to reduce revenues on business already in hand. This accounts for the fact, for instance, that published rates upon grain between Chicago and New York fell during the trunk-line rate wars of the 'seventies and 'eighties from 45 cents to 15 cents, and that the Pennsylvania Railroad at this time transported immigrants from New York to Chicago at the moderate charge of $1 per head.

Moreover, the same kind of reasoning which demonstrates that the cost of additional business to a carrier may be low and, inferentially, that a railroad may cut rates radically, yet with profit, in order to increase its tonnage, will show that such a railroad must resist energetically every attempt to deprive it of traffic. Thus, if business costs 20 cents to handle, and if, of the 20 cents, 15 cents is independent of the volume of business handled, then a carrier can better afford to quote a rate of 6 cents than to let the business go to its competitor. For a rate of 6 cents will pay out-of-pocket costs and contribute something toward general expenses, while anything more may, in the face of active competition, leave the carrier without any revenue at all, but with 15 cents of general expenses to bear. This is the other side of the rate-war problem.

If there is no rate cutting, but merely a change in the volume of railroad traffic, now up, now down, then every increase will bring a more than proportionate increase in net profits, and every decrease a more than proportionate decline.

Out-of-pocket Costs

The preceding paragraphs justify the statement that the costs of shipping any commodity may be divided into two parts. One part, which we have called the out-of-pocket costs, is made up of expenses which can be directly allocated to the movement on which the rate is to be made. These costs will not exist if the movement does not take place, while they emerge as soon as transportation begins. If it costs $6,467 to transport 20,000 tons one mile, and $6,514 to transport 22,000 tons one mile, then the out-of-pocket costs of handling the last 2,000 tons are $47. These are not the total costs which the last 2,000 tons may, perhaps, be asked to bear, but they are the costs for which, at least, and without question, this portion of the tonnage is responsible.

Most explanations of the theory of railroad rates start with the proposition that the rate on every movement should be sufficient to pay the out-of-pocket costs involved. There is little doubt but that such a preliminary allocation of railroad expenses of maintenance and operation is sound practice. It is sound practice because it minimizes the field in which arbitrary decisions must be made regarding the distribution of total railroad costs among the units of traffic handled. Moreover, it avoids the apparent injustice of calling upon the shipper of one commodity to bear a portion of the expenses arising out of the shipment of another commodity. It is therefore a policy which gives rise to the minimum of resistance from rate payers.

Distribution of Costs Which Cannot Be Allocated

When we come to the distribution of nonallocable costs, incurred for the common benefit of many units of transportation, there is no objective basis for division comparable with that which exists in the case of out-of-pocket costs. Clearly the sum of all the rates received from all traffic moved must equal the total costs of railroad service. But whether one particular commodity shall be asked to contribute a larger or a smaller proportion of the revenue which it is agreed that the railroad shall collect from all commodities cannot be determined offhand from any study of the railroad expense account.

There are three fundamental theoretical foundations upon which nonallocable costs can be allocated; through which, that is to say, the impossible can be accomplished. The first goes by the name of value-of-service principle; the second by that of cost-of-service principle; and the third we shall call, for want of a better name, the principle of public policy.

Cost-of-Service Principle

It has just been observed that it is impossible to determine the proportion of general costs that are properly chargeable to a single act of transportation by study of a railroad expense account. This sweeping statement may, however, be qualified by saying that a workable, though perhaps theoretically uncertain, basis for the distribution of nonallocable costs may be derived from a study of railroad expenses if certain assumptions are admitted.

The simplest of these assumptions is that all transportation services should bear the same proportion of the overhead expenses incident to railroad transportation. Some such method of handling overhead is common to many kinds of business other than railroading. Thus, in building a house, a contractor will add a fixed percentage to the bids submitted by subcontractors in order to provide for the general costs of supervision, his risk and profit. Or in fixing prices on manufactured goods, a firm which produces several lines may assume as a guide, at least, to its initial price quotations, that each line may properly be expected to contribute a standard proportion to the overhead costs of the enterprise.

If a carrier does assume that all kinds of traffic which it handles should contribute the same proportionate amount to cover general costs, its procedure in rate-making will be in each case to increase the figure of out-of-pocket costs by a uniform percentage. Thus, if two consignments cost, in the aggregate, $1,000 to haul between A and B, and $200 of the expenses can be allocated to commodity X and $300 to commodity Y, it may, perhaps, be assumed, that a distribution of the total cost of $1,000 between the two articles in the proportion of 200 to 300 will be equitable. This will produce a rate of $400 for the first, and $600 for the second, consignment.

A variation of this method with somewhat greater pretense to accuracy involves a further analysis of the conditions of handling each shipment with reference to average loading, speed of trains, methods of collection and delivery, loss and damage to freight, etc., and a distribution of general costs which is not entirely in the proportion of out-of-pocket costs, but which is also influenced by characteristics of the business that are known, although their effects cannot be exactly determined.

Allocation of Costs Largely Guesswork

It must be confessed that the allocation of general costs upon the basis of specific costs is often very much a matter of guesswork. The traffic manager of a railroad does not proceed after long inductive inquiry to determine what the cost of a given movement may be. What he does in the first instance is to reflect that certain items must be covered because they represent expenses which originate with the traffic under consideration and which would disappear if that traffic were not there. The traffic manager is conscious, beyond this, of certain physical characteristics which affect the expense of transporting the business which is to be moved. He has before his mind, moreover, rates upon other articles which seem to resemble this one. A traffic manager who is attempting to decide what rate commodity X shall pay already knows what commodity Y and commodities A, B, C, and D are paying. These commodities are all of like type; they require about the same degree of attention, they travel about the same distances, and there is a *prima facie* reason why their rates should be the same.

The method is rough enough, in all conscience. Nor is it free from theoretical difficulty. On the other hand, the point of view is clear. It is, to repeat, that the joint nonseparable costs of a railroad, which everybody recognizes are present in railroad operation, and the constant costs which, if one cared to exaggerate sufficiently, might be conceived of as springing into full being, like Minerva, the movement when the railroad begins to operate, should be divided according to some basis connected with the costs which can be actually and separately determined.

Value of Service

A principle of distributing nonallocable costs which differs radically from that just described under the head of cost of service is the distribution of general costs according to the value of the service rendered to the shipper.

The value-of-service principle is essentially a theory of demand. Value, or utility of railroad service to the shipper, is only a term indicating demand for railroad transportation. If one individual is extremely anxious to ship and another is relatively indifferent, then we may infer that the utility of transportation is greater to the first individual than to the second. In other words, the value of service to shipper number one is higher than the value of service to shipper number two.

Ignoring differences in the value of money to different purchasers, we may measure utility by the prices which purchasers are willing to pay. The higher the price offered, the greater the evident utility to the buyer. If one shipper, or class of shippers, is ready to pay high rates for railroad transportation, and other shippers are not willing to pay high rates, the utility or value of the service of transportation to one group may be assumed to be higher than the utility to the other. This may be tested in practice by experiment. If rates are raised, and if the volume of one sort of commodity offered for transportation falls off less rapidly than the volume of another sort of commodity, it may be argued that the utility of the service supplied is greater to the first set of shippers than to the second.

Value of Service and Competition

It is to be borne in mind, of course, in making the type of experiment referred to in the preceding paragraph, that value of a particular service to a shipper depends upon the alternative services which he can command. Thus if points of origin and destination are connected by two competing lines, the value of the service offered by one railroad can never exceed the rate quoted, for equal service, by the other. For the shipper can always forward his commodity by the competing route, and he will never be disposed to pay more to one company than the other is disposed to ask him. In this way the value-of-service principle takes account of competition.

When commodities are shipped for sale, the value of the service of transportation is measured by the difference between the cost to the shipper of acquiring the article at point of origin and the market price for the same article at point of destination. The market price at destination is affected by the supply of the commodity at that point, which in turn is controlled by the facilities for supplying the market either by local production or by importation from outside sources of supply. Here come into play the forces of market competition described in an earlier chapter.

We need not, in this introductory discussion, proceed with an elaborate analysis of the price-fixing process as related to transportation. Nothing in this analysis is inconsistent with the summary statement that the distribution of nonallocable costs in proportion to value of service implies that the overhead, or general, or nonassignable expenses of railroad traffic are assessed in direct proportion to the demand for each service rendered. When the demand for the movement of a particular commodity is found to be great, the rate for the transportation of that commodity will be raised, or, in the contrary event, the rate will be reduced. The system has its disadvantages, of which perhaps the chief is that it seems to permit the railroad to profit from the shippers' necessities, but it has an overbalancing advantage in that, of all possible methods of cost distribution, this is the one which represses the movement of traffic least.

Value of Commodity v. Value of Service

Rate-making according to the value of the service rendered should not be confused with a system of making rates in which charges vary according to the value of the article transported. Doubtless it is usually roughly true that movement of a commodity which retails for $1,000 will be less impeded by a $5 rate than will be the movement of a commodity which retails for $10. But there are cases where this is not true, and there is, apart from the observed fact, no logical reason for identifying the demand for an article with the demand for a service rendered to that article. The value of a commodity is expressed in terms of price upon a given market. The value of the service of transporting an article from one market to another is measured by the difference in cost of acquisition of the commodity in one market and its price in another. Values and differences in values are obviously distinct.

Value of Service and the Ability or Sacrifice Theory of Taxation

It is equally clear that there is little or no analogy between the practice of charging rates according to the value of the service and levying taxes according to the ability of the individual to pay. It is only necessary to state this proposition for its truth to be recognized. An individual who enjoys a large income is able to pay large taxes with moderate sacrifice, and is taxed more heavily than his poorer neighbor on the assumption that the state is entitled to call for comparable efforts from rich and poor in its behalf. But it by no means follows that wealthy persons ship articles as to which the value of service is regularly high or that poor persons offer for transportation articles as to which the value of the service of transportation is regularly low, and so the analogy between "value of service" and "ability to pay" does not hold.

Value of Service Supplies no Test of the Reasonableness of a Level of Rates

Finally, it is to be remembered that a theory which relates rates to the value of the service rendered will never serve to justify a level of rates, but only a relation between individual rates. This fact is often forgotten by railroad men, who urge in explanation and in defense of contested rate structures that the rates attacked do not exceed the value of the service for the rendering of which they are imposed. Value of service, disassociated from any level of reasonable revenues that has been established upon other grounds, is merely a system of getting for a railroad all that shippers can be induced to pay; attention being rendered, be it understood, to the desirability of keeping alive the goose which lays the golden eggs. It is only when regarded as a principle for the distribution of a known volume of otherwise nonallocable expenses that the value-of-service theory loses its objectionable aspect.

Standards of Public Policy

A third alternative basis of distributing nonallocable costs of railroad transportation among the units of service rendered is that of public policy. According to this system, the best basis of cost distribution is that one which tends to accomplish most efficiently the purposes which a community has in mind. This is a very general statement, and yet, although it is necessary to describe the public-policy basis of rate-making in general terms, the application of it is often entirely concrete and practical.

Let us consider a few group policies which may be furthered by a proper adjustment of railroad rates.

One such policy is clearly the military policy of a country. Military activities depend upon railroad transportation, and while government action in time of war is usually direct, yet something can be done, both before and after the outbreak of hostilities, to influence the movement of traffic through rearrangement of rates. One example of this during the war of 1914-18 was the increase in passenger fares undertaken in belligerent countries in order to restrict travel. For like reasons it would be legitimate in war time to raise rates on luxuries, such as ribbons and chewing-gum, but to keep rates down on more essential commodities, such as grain and steel.

Another policy is a nation's foreign-trade policy. Most people will admit that the importation of foreign products is hampered if these products are compelled to bear an unusually large proportion of the nonallocable expenses of the railroads over which they move from port of entry to final destination. Likewise, the exportation of domestic products is made easier if export traffic is freed in whole or in part from the burden of general railroad costs. This subject affords an illustration of how the distribution of costs may serve to further group purposes of a far reaching nature.

There are many other policies, neither military nor connected with foreign trade, which, in each country, may be affected by the adjustment of railroad rates. Indeed, the geographical position and natural resources of a country, the character of its population, or the methods of doing business characteristic of its industry, are always likely to make certain objectives in each community exceptionally important.

This is illustrated in the United States by the great relative significance of long-haul traffic as compared with the lesser importance of such traffic in countries such as England or France. Previous chapters of this book have described the extent of specialization in industry and agriculture which characterizes the United States. Territorial specialization in a nation of remote boundaries requires cheap transportation for long-haul shipments. A system of rates which lightens the burden upon movements to distant markets promotes economy of production in such a nation, and in the long run helps to maintain a high standard of living. In France, however, and still more in England, the location of industry and the habits of business make it relatively more important to foster short-haul rapid movement of small quantities of goods, than to foster slow, far-ranging movements of huge carloads as in the United States.

Again, national sentiment may desire to encourage the production of selected commodities such as grain, or the public may develop theories regarding the concentration of people in cities, or respecting the function of the middleman in industry, or on still some other subject, which have to be respected. In short, the community may hold many views regarding the proper course of its development, and these views must and will in the long run have their influence in the shaping of railroad rates.

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CHAPTER XXI

PROBLEMS OF ADMINISTRATION—TRAFFIC RELATIONS BETWEEN TRANSPORTATION COMPANIES

Problems of Administration

There are two characteristics of a transportation system such as that in the United States which impress even the casual observer. One is that this system is geographically diffuse; the other is that it is administered by a large number of separate companies without centralized control or direction except that supplied by government authority under the provisions of regulative law. If, as is the case with street railway companies, the unit of the system had only local functions to perform, the decentralization of executive authority might seem natural, but since waterways, railroads, pipe lines, and to a less degree automobile carriers, engage in interstate and foreign traffic and necessarily have relations with one another, it would be unfortunate if somehow or other these agencies did not manage to coöperate in national service.

Internal Organization

The fact that transportation companies operate in space and under conditions which make detailed supervision of personnel difficult has caused them to pay more than usual attention to questions of internal organization. This is, at least, true of railroads which have had the most experience and the longest history among the operative units in the transportation field. While railroads have not engaged in time studies nor applied the so-called principles of scientific management as fully as industrial plants, they have worked out in detail alternative relationships of authority between their various officers and they have experimented in the field of employee organization, particularly in recent years. We shall discuss neither railroad internal organization nor the relations of transportation companies to their employees in this volume, but the reader is reminded that common carriers have something to contribute in the field of industrial relations.

Relations of Different Types of Carriers with One Another

When it comes to external organization, the public faces two kinds of problems. One kind concerns the relations between two or more types of carriers, as railroads and inland waterways, or railroads and motor-bus lines. The other has to do with relations between two carriers of the same type, as between two railroads or two automobile companies.

Generally speaking, the relationships of pipe line, waterway, bus, truck, and railroad in most parts of the world have been competitive, not coöperative. Students of the history of American railroads will recall that it was the construction of pipe lines which led to the railroad rate discrimination applied to oil traffic of the 'seventies, while the competitive relations of motor and steam railroad companies are matters of common knowledge. As for inland waterways, it can be said that the trend of public discussion at the time railroads were first built in Europe was to differentiate traffic and to assign to the waterway the carriage of low-grade commodities moving long distances, while railroads were expected to provide for passengers and for the carriage of valuable freight at relatively high rates of speed. But this hypothetical division broke down as rail carriers developed their facilities for mass transportation, and railroad companies and inland navigation companies have for many years competed for the carriage of the bulky commodities of commerce by direct rate-cutting, by purchases of control, and by endeavors to secure governmental financial support.

Danger in Restricting Competition Between Different Types of Service

The danger in enforcing coöperation between different types of carriers lies in the fact that restriction of competition may prevent the occupation of the field by the technically competent, as against the technically incompetent, device. This is particularly true at times when new facilities are being developed in competition with the old, or when two or more forms of new facilities present themselves to the public at one time, as did the steam railroad and the steam-driven road vehicle, which competed in England round about 1830 upon not altogether even terms. The public interest in such cases demands that each type shall find its level unaffected by sentiment. There are no sound arguments to support a multiplication of transport facilities for the sake of variety alone, and, in the long run, there is no admissible public policy save one of equal treatment to all forms of transportation and refusal to support those kinds of enterprise which cannot stand upon their own feet.

Advantages of Coöperation

On the other hand, competition between types of carriers must be competition in service to the public, if it is to determine survival, not a struggle based upon financial resource or destructive ability. Moreover, the public can afford to support a transport undertaking when it is new and comparatively unknown, or when its weakness is inherent in a smallness that is both inevitable and temporary, even if for a time there is some loss involved. And still more obviously, the public may properly insist upon the coöperation of different kinds of carriers in the rendering of services which neither is able to render alone, apart from any question of survival or of the selfish interests of the parties concerned. This is the basis of the demand, for instance, that railroad companies quote through rates with firms which operate upon canals and improved rivers, and that facilities for the transfer of freight from one to the other be established when a combination of two carriers can handle traffic more directly and cheaply than can either one alone. Like most questions of this sort, the problem of coöperation or competition between carriers of different types is easier to discuss in the abstract than to solve in special cases. The decision as to the character of transport to be preferred in any country involves to a certain extent the question of where production is to take place, and so southern and northern Germany, or central and eastern United States, find themselves divided, because one kind of transport will stimulate industrial development at one place, and another kind industrial development at another place, and each enlists its partisans with slight regard to the effect upon the country as a whole.

The Nature of Railroad Pools

We may not discuss the relations between different types of carriers further at this point, fascinating as the subject is, but will now turn to the simpler question of the relations which exist between different carriers of the same type. Historically a very large number of arrangements, at least in the United States, have consisted in voluntary agreements between carriers of the same type, notably railroad companies, and public policy has been concerned with such agreements and has sought to limit their effectiveness, because railroad agreements have been feared as tending to increase price.

The earliest form of railroad traffic agreement is the "pool." As used in railroad discussion, the term "pool" implies an agreement to divide business of a described kind, moving between specified termini, between parties who subscribe to the agreement, upon terms which have been agreed upon. The methods of dividing the business vary. Sometimes two railroads agree each to confine its operations to a certain geographically defined territory. This automatically produces a division of the business from the territory. Sometimes the railroads agree that each will handle only a certain percentage of all the tonnage, and sometimes a similar percentage distribution is settled in advance, not of the tonnage itself, but of the revenue from that tonnage. The difference between these two forms of agreement is unimportant.

Division of Territory

In 1877, when the Lake Shore and Michigan Southern was building south from the Lakes into Pittsburgh territory and the Pittsburgh and Lake Erie was building north from Pittsburgh territory toward the Lakes, an agreement was entered into whereby an east-and-west line was drawn about seventy miles north of Pittsburgh, extending across the entire country, and the business of the country from and to the Pittsburgh territory was partitioned out between the Erie and the Lake Shore. The Erie was given all the territory south of this line; the Lake Shore was given the territory north. This is an early illustration of division of territory.

Limitation of Arrangements for Division of Territory

A division of territory between railroad companies is practicable only when the mileage of the interested parties lies in geographically distinct areas. Indeed, the most effective territorial division is usually accomplished through a refusal by one railroad to build into a district already occupied by another carrier. Construction of this type frequently leads to open warfare, and is not undertaken unless the rewards seem likely, in the long run, to be very great.

When several railroads connect the same termini, or when two or more carriers are in a position to serve a single community although these carriers may have only one terminus in common, the policy of "division of territory" must give way to a more complicated form of agreement, looking to the division of tonnage or of the revenues derived from it.

Division of Tonnage—the Cattle Pool of 1875

An early and simple arrangement for the division of tonnage between competing railroad lines occurred in the so-called "cattle eveners' pool" of 1875. Before 1875, the rates on cattle from Chicago to New York had been low and fluctuating for several years. Rates had fallen as low as $30 or $40 a car, as against $100 to $125 needed to produce a fair profit to the carrier; yet the situation was unsatisfactory to shippers because of frequent changes in rates and the prevalence of gross discrimination. A leading shipper took the initiative in order to bring about some reform. Having ascertained what each of the trunk lines, with their Western connections, considered it was entitled to in a fair competition upon uniform rates, this shipper proposed, on behalf of himself and his associates, that they would undertake to see to it that each of the lines should receive its due proportion of the whole movement, providing the negotiating shippers were allowed a drawback of $15 per car on all cattle shipped from Chicago to New York. If any one of the lines failed to receive its due proportion from the voluntary choice of shippers, then the negotiating parties were either to divert their own shipments to that line, or were to purchase stock on the market, even though it was against their judgment as to its being a profitable investment, and ship by the line that was deficient to an extent that would bring it up to its proper proportion.

At first there were some twelve or fifteen shippers combined in the undertaking, but of these all gradually withdrew but three. An arrangement similar to that in force for cattle applied to hogs, and there was an agreement for shipments to Boston analogous to that described for New York. The contracts between the "eveners" and the railroads were only oral, but they were respected.[1]

Southern Railway and Steamship Association

We may contrast with the simple pool just mentioned the highly organized Southern Railway and Steamship Association, first organized in 1875. Any railroad south of the Ohio and Potomac Rivers and east of the Mississippi could become a member of this association, as could any steamship connecting these roads with Boston, Providence, New York, Philadelphia, or Baltimore. This territory was much wider than that embraced in the other associations previously described. It followed that no single division of business was adequate. In lieu of one apportionment, many sets of percentages were arranged from time to time, sometimes relating to traffic between two particular groups of towns within the field of the association's activities, sometimes to traffic between two other towns. The apportionments were of revenue after deduction of an allowance for operating expenses, no attempt being made to control the movement of the business itself.

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[1] Statement prepared by Charles Randolph, secretary of the Chicago Board of Trade. Report on the Internal Commerce of the United States, 1879. Ex. Doc., Forty-fifth Congress, Third Session, Part III, Serial 1857, Appendix No. 1, pp. 36–39.

Besides divisions of business the pool established a great many relative rate adjustments. Henry Hudson, who has described the working of the Southern Railway and Steamship Association most carefully,[1] says that the general object in fixing differentials was to make such rates that all cities similarly situated should have the same chance in competition for trade. Thus a New York merchant would have to pay the same rates, whether he shipped his goods to Chattanooga, Dalton, Rome, Atlanta, Athens, Gainesville, Anniston, or Birmingham. On the other hand, Boston, New York, and Philadelphia were treated alike, the rates to and from any Southern point being the same. Norfolk, Portsmouth, and Richmond formed another group, and Charleston, Port Royal, Savannah, and Brunswick still another. From the West, rates were the same from Chicago to all Eastern ports, such as Jacksonville, Fernandina, Charleston, Port Royal, Savannah, and Brunswick; and in like manner, from either Louisville or Memphis to the Eastern ports.

Other things accomplished by the association were the establishment of a uniform classification for Southern territory, the control of rate-cutting and rebates and the granting of passes, and the regulation of a great variety of minor matters, such as the use of insured bills of lading, milling in transit, and other practices. The association dealt with freight matters only. A similar pool, the Southern Passenger Association, composed of the same railroads and headed by the same general commissioner, was later created to control the passenger business.

Let us now consider the organization of the Southern Railway and Steamship Association. The ultimate authority lay in the annual convention, to which each road sent a delegate. This convention elected the president, a permanent general commissioner, a secretary and auditor, and a board of arbitration. It also voted on the admission of new members and on matters referred to it by its officers.

The executive committee of the association consisted, in practice, of the manager or executive officer of each of the principal lines which were parties to the agreement. It had jurisdiction over all matters relating to joint traffic, acting by unanimous consent, and it was empowered to delegate its authority to subcommittees. The most important subcommittee was the rate committee, consisting of the general freight agents of lines in the association. This subcommittee also acted by unanimous consent.

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[1] *Quarterly Journal of Economics*, October, 1890, p. 70.

The board of arbitration, first of one, then of three members, had the duty and power of deciding cases referred to it—normally cases in which the executive committee could not reach a unanimous decision.

The general commissioner was executive officer of the association. Agents of initial roads forwarded to the commissioner daily copies of all waybills on through business, while at the same time they deposited in the bank to the order of the commissioner 20 per cent of the revenue from such business. The commissioner, aided by the auditor, and basing his action upon the various pooling agreements in effect between members of the association, calculated the balances due from one road to another for the carriage of tonnage in excess of pooling allotments. After balances had been calculated, the commissioner notified the carriers concerned, and acted as a clearing-house for the settlement of accounts. The 20-per-cent deposit of the debtor companies was applied, so far as possible, to the payment of balances, and the commissioner drew sight drafts for any excess due.

Practice of Pooling Widespread

It should be understood that the pools just described do not embrace all of the rate or apportionment agreements that flourished in the United States before 1887. Arrangements of this type were, on the contrary, exceedingly numerous. In 1885 there were no less than seven distinct railway pools with headquarters in Chicago.[1] A prominent grain merchant testified before the Cullom Committee in 1886 that the business at all the crossings of any consequence within the states of Iowa and Minnesota had been in separate pools. Almost as fast, he said, as the roads had been opened, and wherever they struck a junction point, the roads interested would make a pool on the business at that point.[2] The same thing was true in the State of Illinois.[3] The Southern Pacific and Central Pacific Railroads, in the Far West, besides belonging to the Transcontinental Association, had joint purse arrangements with the Pacific Mail Steamship Company, with the Union Pacific and Denver and Rio Grande Railway Companies on business to and from Utah, with the Atchison, Topeka, and Santa Fé, and Texas and Pacific Companies on business to and from points in Arizona, New Mexico, and Texas, with the Pacific Coast Steamship Company on business of Southern California, with the Oregon Railway and Navigation Company on Idaho business, with the South Pacific Coast Railway Company on Oakland and Alameda business, and with the San Francisco and North Pacific Railroad Company on business of Lake County, California. The multiplicity of pooling arrangements which these illustrations suggest is persuasive of the fact that pools met a real transportation need during the period in which they were in force.

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[1] Cullom Committee Report, p. 744, testimony George M. Bogue.

[2] *Ibid.*, p. 708, testimony E. P. Bacon.

[3] *Ibid.*, p. 601, testimony W. K. Ackerman. See also, for list of early pools, Report on the Internal Commerce of the United States, 1879. Ex. Doc., Forty-fifth Congress, Third Session, Part III, Serial 1857, p. 164.

Advantages of Pools

The advantages ascribed to pools were the following:

1. They conserved the revenues of the participating carriers. Experience early showed that competition between railroads usually led to ruinous reductions in rates. Unlike concerns with small invested capital, railroads could seldom afford to withdraw from any field of traffic when prices fell below the level which yielded them a fair return upon the capital devoted to the service. It was better policy for them in most cases to continue in business at one-half to one-third of the customary rates than to let traffic pass to competing lines and to allow their plant to become idle. This policy meant, it is true, eventual bankruptcy for all participating carriers if persisted in, but withdrawal from traffic also led to bankruptcy and at a more rapid pace. Railroad managers felt that pooling agreements offered a means of escape from unremunerative rates. Fair prices for transportation, they argued in this connection, were essential to their own success, and should be accepted by the shipping public as a condition of satisfactory service.

2. Pools promoted stability in rates. Stable rates were believed to be advantageous to shippers because they permitted manufacturers and dealers to undertake long-time operations without fear of change in the bases upon which their calculations rested. The advantages of rate wars were said to be largely speculative. Rates fell, it is true, 50 or 60 per cent, but the reduced rates were not guaranteed beyond the day on which they were quoted, and so dealers derived little advantage from them. This was because dealers were unable

to purchase and receive deliveries on the same day, and the next day or two the rates might be advanced. The fluctuations also worked injustice between competing merchants. Two men might do business side by side. One might purchase and ship at what were thought to be advantageous rates. A week later his rival might make similar purchases, and, rates having fallen still lower, avail himself of them, and thus be given an advantage over his competitor which was in no respect due to sagacity or enterprise, but to the circumstance of having happened to ship when rates had dropped to the lowest figure.[1]

3. Pools lessened discrimination. It was pointed out with considerable force that competition tempted railroads to discriminate, and that agreements to limit competition, including apportionments of traffic, would tend to prevent the granting of special favors or the quoting of secret and reduced rates. Under a pool, that is, no railroad could enlarge its business at the expense of its competitors by concessions to selected customers.

Arguments Against Pools

The principal argument against pools was that they made unreasonable rates possible. During the discussions which preceded the enactment of the Interstate Commerce Law, Judge Reagan of Texas reminded Congress that regulation and competition were the two ways of protecting the public against railroad extortion. He added:

> "Now if we do not prohibit them [the railroads] from pooling we certainly deny ourselves the second remedy against the evils of monopolies; and when we look at the extent and character of our country, and to the speed and value of the means of transportation, we shall find the second to be the most valuable and important check on their monopoly powers. . . . Is it not manifest that as competing lines, when they can make rates as high or low as they choose, they would carry the freight cheaper than they would if these lines were allowed to pool their freights, and, being freed from competition by railroads, they could charge any price they might please?
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> "To this they reply that unless they are allowed to pool their freights the result will be a war among the roads, with the ultimate wreck of some and the survival of the strongest. That must mean that their present management rests on a species of

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[1] Report on the Internal Commerce of the United States, 1879, *sup. cit.* Information furnished by J. W. Midgley, App. No. 4, p. 57.

> morality which makes it necessary for them to war on or destroy each other, or to combine and rob the people. This being the case, if somebody must be ruined or robbed, would it not be better that 50,000 railroad men should rob each other, in the ways most agreeable to themselves, than that the 50,000,000 people of this country should deliberately consent to be robbed by the railroad men?"[1]

The argument that railroad pools were likely to lead to unreasonable rates convinced Congress in 1887 that pools should be prohibited, and such a prohibition was, as we shall see, inserted in the Interstate Commerce Law. Nor were the apprehensions of the legislators altogether without reason. It was true that most pools up to that time had proved short-lived, and that in spite of pools the average receipts, and probably the average rates in force on American railroads, had declined. But the experience of the country with pools had been short; the pool type of organization was spreading rapidly; its managers were perfecting its forms and were seeking a legal sanction which would have made pooling agreements enforceable in the courts. It was not at all foolish to expect very different results from railroad pools during the twenty years following 1887 from those witnessed during the twenty years prior to that date, nor that these results might have been such as were contrary to the public interest.

Prohibition of Pools in the Act of 1887

The provisions of the Act of 1887 relating to pools were as follows:

> Section 5: "That it shall be unlawful for any common carrier subject to the provisions of this act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads, or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid, each day of its continuance shall be deemed a separate offense."

This Act made illegal the apportionment clauses of existing pools, but it was not understood to prevent the continuance of associations for the maintenance of rates. The old agreements were therefore continued in such modified form as would, it was thought, conform to the new law. In the case of the Southern Railway and Steamship Association, this meant the abandonment of the pooling agreements in effect between members of the association and the machinery erected for the calculation of balances and the division of revenue. The distribution of traffic was henceforth to be effected by adjustment of rates, for the maintenance of which a system of fines was introduced. The trunk-line railroads signed new articles of association in 1887 and again in 1889 looking to the maintenance of rates, and in 1895 they followed this up by the organization of the so-called "Joint Traffic Association," governed by a board of managers with power of recommending such changes in rates as might be reasonable and just. Among the duties of the managers was that of securing to each company equitable portions of the competitive traffic so far as could be legally done. In order to accomplish this, it was provided that if the maintenance of uniform tariffs by all the lines reduced the traffic of any party below a fair proportion of the competitive traffic, the tariffs should be so adjusted from time to time as to protect such lines from an unjust depletion of revenue.

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[1] H. R. Committee on Commerce, 1882, House Misc. Doc. No. 55, Forty-seventh Congress, First Session, Serial 2047, p. 248.

No company which was a party was permitted in any way to deviate from the rates, fares, charges, or rules recommended by the managers, except by a resolution of the board of directors of the company, and then only after thirty days' notice to the association. Violations of the agreement were punishable by a fine not exceeding $5,000, except where the gross receipts from the transaction which violated the agreement exceeded $5,000, when the fine might be increased.

Other pooling agreements were reorganized, after 1887, in the same general spirit.[1]

Prohibition of Contracts in Restraint of Trade by the Sherman Anti-Trust Law of 1890

In 1890 Congress passed additional legislation which, as interpreted by the courts, affected traffic agreements between railroad companies. The new law was known as the Sherman Anti-Trust Act. Sections 1 and 2 of the Sherman Act read as follows:

> Section 1: "Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby

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[1] Langstroth and Stilz, *Railway Coöperation*, p. 67 ff.

> declared to be illegal. Every person who shall make any such contract or engage in any such combination or conspiracy shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court."
>
> Section 2: "Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a misdemeanor, and, on conviction thereof, shall be punished by fine not exceeding five thousand dollars, or by imprisonment not exceeding one year, or by both said punishments, in the discretion of the court."

It was not supposed, at the beginning, that the Sherman Act applied to railroads. True, the opinion had been expressed during the course of the debates leading to the enactment of the bill that transportation was covered by the terms of the proposed law. But on the other hand, Congress had rejected amendments applying the act to transportation in express terms, and it was well known that the primary reason for the passage of the Sherman Law had been the desire to prevent industrial, not railroad, monopoly.

Trans-Missouri Freight Association Case

In 1897, however, in the Trans-Missouri Freight Association case,[1] the United States Supreme Court applied the Sherman Act to railroads. The freight association which was here attacked was one of the new Western organizations which had replaced, in 1889, the pooling arrangements common before 1887. It had a chairman, and a committee to consider changes in rates, rules, and regulations. Proposed changes were to be voted upon at monthly meetings of the association, and all parties were to be bound by the vote unless members proposing a modification which was disapproved should give written notice that in ten days thereafter they would make such modification notwithstanding the vote of the association. Violations of the agreement, including presumably the cutting of rates, were to be reported to the managers, who were to impose fines not exceeding $100.

Evidently this was a less rigid arrangement than the old pool, yet one which did exercise some restraint upon its members. The Supreme Court held that the agreement, though legal when made, became illegal on the passage of the Act of 1890. The following year a similar conclusion was reached with regard to the Joint Traffic Association.[1]

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[1] 166 U. S. 290, 1897.

These decisions showed that binding agreements to maintain rates were no less illegal under existing law than agreements for the apportionment of traffic. Once more the system of traffic arrangements between competing carriers had to be revised.

Clauses in the Transportation Act of 1920 Relating to Railroad Pools

Section 407 of the Transportation Act amends the Interstate Commerce Act to read, with regard to pools, as follows:

> "That, except upon specific approval by order of the Commission [Interstate Commerce Commission] as in this section provided, and except as provided in paragraph (16) of section 1 of this Act, it shall be unlawful for any common carrier subject to this Act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads, or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid each day of its continuance shall be deemed a separate offense: *Provided*, That whenever the Commission is of opinion, after hearing upon application of any carrier or carriers engaged in the transportation of passengers or property subject to this Act, or upon its own initiative, that the division of their traffic or earnings, to the extent indicated by the Commission, will be in the interest of better service to the public, or economy in operation, and will not unduly restrain competition, the Commission shall have authority by order to approve and authorize, if assented to by all the carriers involved, such division of traffic or earnings, under such rules and regulations, and for such consideration as between such carriers and upon such terms and conditions, as shall be found by the Commission to be just and reasonable in the premises."

As is sometimes the case in legislation, the exceptions in the Act of 1920 with respect to pooling are more important than the mandatory provisions. In brief, the Act gave to the carriers once more the right to apportion traffic, subject to the approval of the Interstate Commerce Commission and upon terms which the Commission shall pronounce reasonable.

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[1] 171 U. S. 505, 1898.

Paragraph 16 of Section 1, which seemed to create a still further exception, merely gives to the Commission authority to issue instructions with regard to the routing of traffic when a carrier may be for any reason unable to transport the traffic offered to it so as properly to serve the public. This routing and accompanying handling sometimes requires a kind of division of traffic between normally competing carriers, but it has little importance for the general pooling problem, and will not be again referred to.

Reasons for Change of Policy in 1920

Evidently the policy of the Act of 1920 regarding pools was contrary to that of the Act of 1887. The reason for a change in the law was probably that during the thirty-three years since 1887 the level of railroad rates had been brought under government control. While competition was still important, Congress felt that it could trust the Interstate Commerce Commission to protect the public from obvious extortion.

Moreover, the emphasis in later discussions had come to be rather upon railroad coöperation than upon railroad competition. This was partly due to an appreciation of the importance of stability and equality in rates, but still more to the fact of a shortage in transportation facilities which made the need for effective use of railroads more pressing than the need for lower rates.

As a result of the Act of 1920, pooling agreements are once more legal if they receive the prior approval of the Interstate Commerce Commission. Whether the authority of the Commission also extends to the legitimation of agreements for the maintenance of rates, apart from contracts for the apportionment of traffic, depends upon whether such arrangements may be properly termed "agreements for the pooling of freight." If they come within a fair definition of pools, as they probably do, they may be relieved from the prohibitions of the Anti-Trust Act as well as from those of the Act of 1887.

In any case, it is doubtful whether railroads are longer interested in agreements to maintain rates or to control traffic of the type so common before 1897. Only three applications have been made under Section 407, although it has now been seven years in force. Railroad conditions are relatively stable, discriminations or departures from the published rates are subject to severe penalties, and organizations have been built up within the old law sufficient to provide the indispensable minimum of traffic or business cooperation between railroad companies.

Traffic Associations

The present form of railroad organization for the consideration of traffic problems is the "traffic association." Such an association may be either a freight association or a passenger association. In only one important case does the same body handle both freight and passenger matters.

The principal freight associations are the following:

1. The New England Freight Association.
2. The Trunk Line Association.
3. The Central Freight Association.
4. The Western Trunk Line Committee.
5. The Southwestern Tariff Bureau.
6. The Transcontinental Freight Bureau.
7. The Southern Freight Association.
8. The Canadian Freight Association.

The principal passenger associations are the following:

1. The New England Passenger Association.
2. The Trunk Line Association—Passenger Department.
3. The Central Passenger Association.
4. The Southeastern Passenger Association.
5. The Southwestern Passenger Association.
6. The Western Passenger Association.
7. The Transcontinental Passenger Association.

In addition to these leading associations, passenger and freight, there are a number of minor or local associations, sometimes with jurisdiction over a state or over some other small defined section, as in the case of the Utah Freight Bureau or the Illinois Freight Association, sometimes limited to a single city or to a single class of traffic, as in the case of the Buffalo Freight Committee, the Cincinnati Freight Committee, the Ohio Coal Traffic Association, or the Gulf Foreign Freight Committee.

Purposes of Traffic Associations

The purposes of traffic associations are usually summarized in their articles of agreement. The following quotations will show the nature of the explanatory statements which these articles commonly contain:

> *Western Trunk Line Committee:* "The purpose of this agreement is to aid in the enforcement of Federal and State laws regulating commerce; the prevention of undue preference to any person, firm, company, corporation or locality, or to any particular traffic in any respect, and as a necessary means to this end, for an interchange of authentic information regarding rates; for consultation and mutual advice as to the reasonableness and legality of rates, and to insure necessary and economical publication thereof."
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> *Western Passenger Association:* "The purposes of this Association are to provide means for interchanging authentic information with regard to tariffs and methods of ticketing; for the compilation and distribution of statistics and for consultation and mutual advice with respect to the conduct of passenger traffic covered hereby."

Further Explanation of the Functions of Traffic Associations

In general, it may be said that the function of the traffic association is to assure simultaneous consideration of tariff changes by all interested railroads, so that there may be free interchange of views between carriers, and so, also, that all railroads affected may be advised of action which any line intends to take in time to meet it, if they wish, by similar action of their own. Most people agree that rates must be the same by all practicable railroad routes between named termini. If rates are not the same, or at least if they differ by more than well-considered amounts, there will be sudden diversions of traffic from one railroad to another, and objectionable discriminations in favor of shippers upon the lines which reduce rates as against shippers upon lines on which rates are maintained. Perhaps the most important thing which traffic associations do is to minimize discriminations and diversions of this sort.

Traffic assocations differ from pools in that they attempt no apportionment of traffic or revenue, contain no stipulation in their articles regarding the maintenance of rates, and provide for no fines, deposits, or other means by which individual companies may be forced to conform to the views of the majority of the members of the association. This, at least, has been the line of distinction up to the present time. Since the law regarding railroad combinations has been made more liberal, it is possible that traffic associations may in the future take on some of the functions of the older pools. This they have not so far done.

Organization of a Typical Traffic Association—the Transcontinental Freight Bureau

Probably the best way to make clear the working of a traffic association is to describe in some detail the operation of some typical organization. For this purpose the Transcontinental Freight Bureau is selected, partly because it is important, and partly because a recent investigation of the bureau by the Interstate Commerce Commission makes it possible to secure intimate details regarding the conduct of its business which are not available in the case of other associations or committees.[1]

It may be added that the bureau's organization, operation, and procedure are similar in most respects to those of other carrier associations such as the Western Trunk Line Committee, Southwestern Tariff Bureau, and Central Freight Association.

Organization and Membership

The membership of the Transcontinental Freight Bureau consists of twenty lines, all operating west of Chicago and all having mileage west of the Missouri River. The practical control of the affairs of the association lies, however, in the hands of the nine companies which reach the Pacific coast.

The general administration of the bureau's business is intrusted to an executive committee composed of representatives of Pacific-coast terminal lines. There is also a finance committee which authorizes expenditures, an auditing committee, and an advisory committee composed of railroad counsel who assist in the defense of cases before the Interstate Commerce Commission which bring in issue rates, charges, rules, or regulations published by the bureau.

The actual operation of the bureau is conducted by a permanent chairman, assisted by a committee of freight traffic managers of Pacific lines with respect to proposed changes in rates or regulations. The freight traffic managers' committee is no part of the bureau organization, but works with it from outside. Subject to the chairman is a personnel of 235 members.

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[1] In the Matter of the Transcontinental Freight Bureau, 77 I. C. C. 252, 1923.

Activities of the Bureau

The activities of the bureau comprise: (a) publication of tariffs and their interpretation; (b) weighing and inspection service; and (c) consideration of proposed changes in tariffs. The bureau maintains a considerable staff of inspectors at important junction points in Pacific-coast territory, and employs traveling inspectors also. These men correct errors in descriptions and weights of shipments, on carload and less than carload, local and through traffic. In 1921, in north-Pacific-coast territory alone, including Huntington, Oregon, and Wallace, Idaho, the additional revenue gained by carriers as a result of these inspections was $414,415.93, against an expenditure of only $80,990.18.

The publication of tariffs is conducted upon instructions from the freight traffic managers of Pacific-coast lines. The bureau has no independent initiative in the matter, but acts as publishing agent only. It does, however, seek the concurrence of Eastern lines if the proposed rates are for application to or from points east of Chicago or the Mississippi River. It also manages to include in eight major tariffs the principal transcontinental rates of practically all rail carriers. This is a great convenience to shippers; moreover, it tends to make rate changes effective for all companies upon the same date, and helps to maintain established relationships between competing shipping points.

Proposed Changes in Tariffs

The most far-reaching work done by the association is in relation to proposed changes in tariffs. Proposals for changes in rates, rules, or regulations originate with a member line or with a shipper, and upon receipt by the bureau are docketed for reference to the standing rate committee. This is a committee of three, elected by the executive committee. Pending consideration, the item is printed in a weekly docket bulletin published by the bureau and distributed to a considerable mailing list. In due time the standing rate committee takes up the new proposal, considers it, sometimes seeking information from carriers or listening to oral representations by shippers on the matter, and renders a decision. Such decisions of the committee are mailed to the freight traffic managers of the Pacific lines, with copies to the executive committee. If the rate committee is not unanimous in its opinion, or if the freight traffic managers are not unanimous in their approval, the question is set for discussion before the next meeting of freight traffic managers and is there disposed of. The freight traffic managers act, of course, as direct representatives of their several lines. If they agree upon a rate, either with or without discussion, this rate will be presently authorized by the carriers acting individually and published by the bureau. If they disagree, each road will act as it deems best for the protection of its own interests.

It should be added that while the regular procedure is that described, there is nothing in the organization of the bureau which will prevent any individual carrier from directing the bureau to publish a rate without reference to the standing rate committee. In such cases the bureau will act as directed, although it will require the personal signature of the executive traffic officer of the carrier as authority. Notice of changes ordered in this way is circulated to the other Pacific lines in order to afford them opportunity to have corresponding rates published simultaneously for their account, if they so desire.

Advantages of the Transcontinental Freight Bureau

Both the advantages and the disadvantages of the Transcontinental Freight Bureau were discussed in the course of the hearing before the Interstate Commerce Commission in 1923. The merits claimed for the bureau were the following:

1. With respect to changes in rates, it was argued that the standing rate committee of the bureau could command fuller information than was ordinarily available to any single carrier, and that its decisions would be therefore more nearly correct than those made by railroads which acted without such an organization. This was because individual lines did not have the hesitancy in furnishing the standing rate committee with confidential information concerning such matters as the volume of movement of particular traffic that they would have if a competing line should seek like information for its guidance in fixing rates independently. Since objections by freight traffic managers to committee decisions were registered in not more than 10 per cent of the cases, the importance of the superior position of the standing rate committee was manifest.

2. Witnesses for the shippers stated before the Interstate Commerce Commission in 1923 that it was of advantage to them to be able, through the bureau, to have applications for tariff changes considered by all member lines at the same time, instead of being compelled to file them with the individual lines and then carry on the

necessary correspondence with each, because this procedure resulted in quicker action.

3. Both carriers and shippers agreed that it was an advantage to have changes in rates, rules, and regulations made upon all lines simultaneously.

4. With respect to the publication of rates, all parties indorsed the bureau's method of combining in one set of tariffs the principal transcontinental rates of practically all carriers. This was believed to be economical from the point of view of the carriers. From the point of view of shippers, joint publication afforded a ready method of ascertaining the rates available to their competitors, made rate changes effective for all upon the same date, and maintained established relationships between competing points. It also reduced the volume of publications which each shipper had to have at his disposal.

5. The weighing and inspection service was not objected to by shippers, while it was thought extremely valuable by the railroads.

Disadvantages of the Transcontinental Freight Bureau

The disadvantages of the Transcontinental Freight Bureau, and this applies to traffic associations generally, as well as to pools, are those incident to the restriction of competition. It is clear enough that some restraint of this character does characterize the operation of a traffic association, if only because close contact between traffic representatives of member lines exposes each to the force of a public opinion among carriers which is on the whole adverse to rate reductions. In the particular case of the Transcontinental Freight Bureau a few witnesses representing intermountain territory expressed the opinion that without a bureau they would be able to secure more advantageous rate adjustments from individual carriers. This was perhaps typical of a larger situation.

On the other hand, it is equally clear that the restraint of competition which results from the Transcontinental Freight Bureau and similar associations is much less than was characteristic of the old pooling agreements, and that it has not prevented individual action by railroad companies in an appreciable number of cases. Such minor restraints as exist are overbalanced by the obvious utility of the traffic association to carriers and to shippers alike.

The Transcontinental Freight Bureau was explicitly approved by the Interstate Commerce Commission in 1923, and any further attack upon this type of organization is now unlikely.

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CHAPTER XXII

OPERATING COÖPERATION BETWEEN RAILROAD COMPANIES

Operating Agreements Between Transportation Companies

Operating arrangements between transportation companies are easier to enforce than agreements regarding price or the division of business, because there is less difference in interest between the parties, and also because they are less likely to rouse public opposition. Upon the continent of Europe, a number of governments have reached a general agreement upon such matters, under the auspices of the League of Nations,[1] and there is also an international car pool,[2] and a variety of agreements between individual companies. Likewise in the United States there are operating agreements and there is a very important organization known as the American Railway Association, whose functions we shall presently describe.

European International Railway Convention

The European international convention of 1923 begins with an undertaking by the contracting governments to promote continuity of service in international traffic. Special mention is made of supplementary railroad construction at junction points where necessary, of common stations, of convenient schedules for international trains, and of the administration of customs and police formalities so as to impede international traffic as little as possible.

In addition to the clauses referred to in the preceding paragraph, the governments signing the convention agree to encourage the railroad administrations subject to their sovereignty or authority in the free exchange of rolling-stock. This encouragement is expected, of course, to take many forms, but it naturally involves two practical steps: first, government approval of railroad agreements relating to standards of construction and maintenance of equipment; and, second, government undertakings to prevent the seizure of rolling-stock while in foreign service.

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[1] Bulletin des transports internationaux, 1924, vol. xxxii, Annex, p. 27, "Convention et statut sur le régime international des voies ferrées." See also *Bulletin*, February, 1924, p. 49. Mention should also be made of the Berne Convention of 1890, through which the contracting governments accomplished something like a codification of laws applying to international transportation. This convention was revised in 1908, and a further revision now awaits ratification by the various European parliaments.

[2] *Ibid.*, p. 194, "Union internationale des wagons."

A third part of the convention relates to the use of single through contracts of shipment for freight or passengers forwarded from one country to another. Still other subjects touched upon are the quotation of through rates, the auditing and division of revenue on international traffic between participating carriers, the reservation of the right to prohibit the entry into a country of certain classes of goods, and provisions for interpretation and appeal of the clauses of the convention itself.

Signatories to International Railway Convention

Up to February, 1924, the international convention of 1923 had been signed by representatives of the following nations: Germany, Austria, Belgium, Brazil, British Empire, Chile, Denmark, Free City of Danzig, Spain, Esthonia, Finland, Greece, Hungary, Italy, Lithuania, Holland, Poland, Rumania, Salvador, Serbia, and Uruguay.[1]

This convention is not, of course, itself an operating agreement between railroad companies, but only an undertaking by governments to facilitate the conclusion of such agreements. It is, nevertheless, a declaration of policy of the first importance, which has already led to the negotiation of a convention for car interchange between most of the important railway systems of Europe, and will doubtless be followed by the revival of other international railway organizations or agreements which existed before the war.

Railroad-operating Coöperation in the United States

In a country like the United States, the absence of national political frontiers facilitates the operating coöperation of independent railway companies. The most striking instances of such coöperation in this country are in the field of accounting, in the establishment of through rates and routes, in the common use of cars, and in the development of standard practice through the activity of committees of the American Railway Association and of the International Railway Association. There is nothing comparable to these achievements in the activity of other transportation agencies. Taken in connection with the extension of the liability of the initial carrier to the shipper for loss or damage occurring anywhere *en route*, they do much to transform the variously owned railway properties of the country into a single operating system. This is a decidedly fortunate outcome, for the reason that traffic in this country constantly tends to pass beyond the lines of the transportation system upon which it originates, and coöperation between carriers both improves service and relieves the shipper of expensive responsibility for the distant handling of his goods.

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[1] "Convention et statut sur le régime international des voies ferrées," *sup. cit.*

Let us examine some of the forms of operating coöperation which contribute to the functioning of American railroads as a single transportation system.

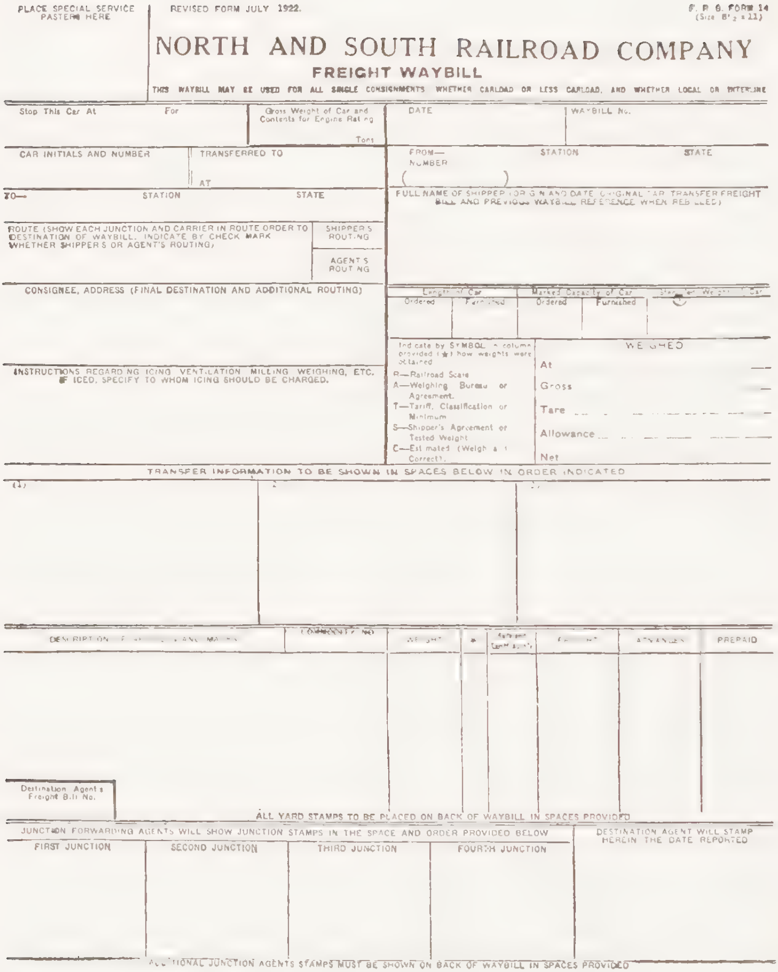
Through Billing

One simple method by which railroads coöperate in interline hauls is by the use of through or interline waybills. A waybill, in American practice, is a document representing the freight and traveling with it. The form on the next page is in common use.

Examination of this waybill will show that it contains spaces for the insertion of the names of shipper and consignee, description of goods, weight, rate (per 100 pounds), freight charges (weight multiplied by rate), advances, and amount prepaid. The meaning of these terms is obvious except perhaps that of the term "advances," which refers to expenses incurred by the billing carrier in connection with shipments, that are to be collected, in addition to freight charges, from the consignee. The waybill also has place for routing instructions, for the identification of the car in which the shipment moves, for the name of the station where the bill is made out, and for a billing date and number. It is an operating paper, which accompanies freight from the beginning of its journey to the end. The waybill serves the freight train conductor as a memorandum of freight which is on his train, it informs the station agent of the charges which must be collected from the consignee, and it supplies the general auditor with a record and a basis for records which enable him to check the accounts of station agents, to divide revenues among all companies that are interested, and to prepare statistical reports descriptive of the business done.

Advantages of Through Billing

Before the practice of through billing was introduced, a carrier customarily "billed" only to a junction point with a connecting road. That is to say, the point of destination indicated upon the waybill was the end of the first carrier's line. At the junction point, the connecting carrier made out a new waybill, showing the junction point as place of origin, and the place to which the freight was going as the destination; unless, indeed, more than two carriers were involved, when the arrangements became still more complicated.



PLACE SPECIAL SERVICE
PASTERS HERE

REVISED FORM JULY 1922.

F. R. S. FORM 14
(Size 8½ x 11)

NORTH AND SOUTH RAILROAD COMPANY

FREIGHT WAYBILL

THIS WAYBILL MAY BE USED FOR ALL SINGLE CONSIGNMENTS WHETHER CARLOAD OR LESS CARLOAD, AND WHETHER LOCAL OR INTERLINE

Stop This Car At | For | Gross Weight of Car and Contents for Engine Rating | Tons | DATE | WAYBILL No.

CAR INITIALS AND NUMBER | TRANSFERRED TO | AT

FROM— | STATION | STATE

NUMBER ( )

TO— | STATION | STATE

FULL NAME OF SHIPPER (OR GIVE ORIGIN AND DATE ORIGINAL CAR TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE WHEN REBILLED)

ROUTE (SHOW EACH JUNCTION AND CARRIER IN ROUTE ORDER TO DESTINATION OF WAYBILL. INDICATE BY CHECK MARK WHETHER SHIPPER'S OR AGENT'S ROUTING) | SHIPPER'S ROUTING | AGENT'S ROUTING

CONSIGNEE, ADDRESS (FINAL DESTINATION AND ADDITIONAL ROUTING)

Length of Car		Marked Capacity of Car		Stenciled Weight of Car
Ordered	Furnished	Ordered	Furnished	

INSTRUCTIONS REGARDING ICING, VENTILATION, MILLING, WEIGHING, ETC. IF ICED, SPECIFY TO WHOM ICING SHOULD BE CHARGED.

Indicate by SYMBOL in column provided (★) how weights were obtained

R—Railroad Scale
A—Weighing Bureau or Agreement.
T—Tariff, Classification or Minimum
S—Shipper's Agreement or Tested Weight
C—Estimated (Weigh and Correct).

WEIGHED

At
Gross
Tare
Allowance
Net

TRANSFER INFORMATION TO BE SHOWN IN SPACES BELOW IN ORDER INDICATED

(1) | (2) | (3)

DESCRIPTION OF ARTICLES AND MARKS	COMMODITY NO.	WEIGHT	★	[illegible]	FREIGHT	ADVANCES	PREPAID

Destination Agent's Freight Bill No.

ALL YARD STAMPS TO BE PLACED ON BACK OF WAYBILL IN SPACES PROVIDED

JUNCTION FORWARDING AGENTS WILL SHOW JUNCTION STAMPS IN THE SPACE AND ORDER PROVIDED BELOW

FIRST JUNCTION	SECOND JUNCTION	THIRD JUNCTION	FOURTH JUNCTION	DESTINATION AGENT WILL STAMP HEREIN THE DATE REPORTED

ADDITIONAL JUNCTION AGENTS STAMPS MUST BE SHOWN ON BACK OF WAYBILL IN SPACES PROVIDED

Local billing of this type was and is expensive. It requires a multiplication of clerical work. Moreover, it increases the chances of mistake. Still again, the tendency of local billing is to break up a through shipment into a series of local hauls. It is evidence that a carrier seeks to limit its responsibility for loss or damage to accidents occurring upon its own line, and refuses to employ connecting carriers for delivery at a point beyond its own terminus, thus endeavoring to place the shipper in direct contractual relation with each carrier over whose lines his goods may pass.

It needs no argument to prove the convenience, in an interline transaction, of using a single waybill, from point of origin to final destination on whatever railroad line that destination may be. While through billing cannot be said to be universal, yet in the majority of cases railroads recognize the advantage of acting as a unit in the matter of billing, and operate in this respect with little attention to the dividing lines created by the diversity of ownership of separate railroad systems.

Through Rates and Through Routes

Another species of coöperation in interline shipments is in through rate-making. Instead of quoting rates only to the terminus of its own line, and leaving it to the shipper to obtain an official statement from the connecting carrier of the rate which will apply "beyond," carriers agree upon, and file with the Interstate Commerce Commission, rates which apply from a station upon one road to stations upon other roads. These rates are usually and properly less than the sum of the local rates; we are interested at the moment, however, less in their absolute amount than in the fact that they represent coöperative action by two or more railroads with respect to traffic which passes over more than one line on its way to destination. Inasmuch as through rates result from agreement between particular carriers, the route to be followed by traffic seeking the advantage of the through rates is specified at the time the rates are established. We have, therefore, through routes as well as through rates. Naturally, upon through routes, schedules and facilities receive joint attention as well as rates.

Division of Revenue on Interline Business

Still another form of coöperation between connecting carriers has to do with accounting in interline business. The efficiency of the

C.S.

DAILY ABSTRACT OF INTERLINE AND INTRA SYSTEM WAYBILLS RECEIVED

1-26-50,000

WAYBILL		FREIGHT BILL NUMBER	STATION FROM	KIND OF FREIGHT	WEIGHT	DEBIT		CREDIT
DATE	NUMBER					FREIGHT	ADVANCES	PREPAID

REPORT NO. SHEET NO. STATION NO. STATION NAME DATE AGENT methods employed by American railroads in making quick and accurate division of the revenues derived from through business, and the extent to which these methods require coöperative action between interested carriers, is seldom appreciated by the general public.

The initiative in interline accounting is usually undertaken by the destination railroad, because the original waybill, upon which the accounting depends, is in the hands of the agent of the destination railroad at the time when the act of transportation is completed.

Abstracts of Interline Waybills

The process of interline settlement begins with the forwarding of waybills by an agent to the auditor of his railroad. This is done at regular intervals, generally daily, and the bills are accompanied by report sheets upon which the most essential items of information upon the bill—consignor, consignee, nature of shipment, weight, rate, advances, and prepaid—are set forth. These reports are known as abstracts, and are in the following form on page 394.

Abstracts of interline freight received are checked in the auditor's office against the accompanying waybills.

Division Statement

The division statement is made out from the abstract. This is a statement sent by the receiving railroad to all railroads from which freight has been received during the preceding month.

The division statement reproduces the information contained in the abstract, although in slightly different form, owing to the fact that it represents the accumulation of reports from many receiving stations on the reporting railroad line. The division statement also contains one thing which the abstracts do not, namely, a calculation of the proportion and amount of revenue to which each railroad that has participated in interline movements is entitled as its share. The basis of such a calculation is found in agreements previously entered into by the parties interested.

Correction Account

For purposes of monthly settlements between carriers the division statement rendered by the receiving road is accepted as accurate. This statement is, however, checked by the carriers to whom it is sent, errors are notified to the receiving road, and the latter, through a so-called "correction account," adjusts the mistakes which have

SHEET No.__________

NORTH AND SOUTH RAILROAD COMPANY

DIVISION STATEMENT

DIVISION OF REVENUE SHOWN ON INTERLINE WAYBILLS FROM STATIONS ON THE LINE OF THE__________

ROUTE__________ MONTH OF__________192__

ABST. NO.	FROM	TO	STATE OR INTER-STATE	NO. OF CARS	COM-MOD-ITY	WT.	FRT.	AD-VANCES	PRE-PAID	PROPORTIONS						
										N.S.R.R.CO.	CO	CO	CO	CO	CO	CO.

been discovered. The form of a correction account is reproduced on page 398.

It should be added, to make the description of the process of interline settlements complete, that when a railroad has a balance to pay to another railroad on received business and a balance to receive on forwarded business, or *vice versa*, only the difference between the two amounts is remitted or collected. This fact, as well as the circumstance that every carrier is a receiver as well as a forwarder of freight, and so initiates part of the settlements in which it is interested, has done much to convince American railroads of the fairness and economy of the interline accounting methods which they pursue.

Before the introduction of the plan of audit office settlement between railroads upon a "received" basis, most railroads followed what was known as the "junction settlement" plan—a system which called for an accounting at each junction point between railroads at the time when freight passed from one to the other. This was an altogether clumsier and less effective method than the one now in force. In many places in Europe, and occasionally in the United States, still another manner of settlement is in force, more or less following the analogy of the clearing-house universal in banking practice. The establishment of a clearing-house requires even greater coöperation between carriers than does the audit office settlement plan. Because of the efficiency of the latter, the clearing-house method, while it has its advocates, has never found widespread favor in the United States.

Free Interchange of Cars Between American Railroads

There is still another form of operating coöperation between railroads which is even more important than through billing, or through rate-making, or well-devised methods of interline revenue settlement. This consists of the free circulation of freight cars, with little or no regard for ownership.

It is very important that freight cars move readily from one railroad system to another, because if they did not the expense and delay incident to a shipment from a point upon the line of one carrier to a point upon the line of another carrier would become intolerable. All freight would necessarily be transferred from car to car at every junction. There would be labor costs to pay, there would be loss and damage as a result of handling, and consignments would have to wait whenever the supply of cars to receive them at a junction happened to be too small to accommodate the volume of goods accumu-

NORTH AND SOUTH

ACCOUNTING

CORRECTIONS OF PRIOR SETTLEMENTS OF INTERLINE WAYBILLSFROM STATIONS ON ROUTES ____

MONTH AND YEAR REPOR'D	WAYBILL		FROM	TO	COMMODITY	ITEM	WEIGHT AND CHAR	
	DATE	NO.					WEIGHT	FREI'HT
						1		
						2		
						3		
						4		
						5		
						6		
						7		
						8		
						TO'L		

Reference to Statement of Difference or Authority for Adjustment		WEIGHT AND CHAR	
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	TO'L		
DIFFERENCE TO BE ADDED			
DIFFERENCE TO BE DEDUCTED			

RAILROAD COMPANY

DEPARTMENT

CORRECTION ACCOUNT No.____________

LINE OF THE____________

______ MONTH OF____________ 192__

GES AS SETTLED		PROPORTIONS AS SETTLED													
ADV'S	PREP'D	%	AMT.	%	AMT.	%	AMT.	%	AMT.	%	AMT.	%	AMT.	%	AMT.

GES AS CORRECTED		PROPORTIONS AS CORRECTED													

lated there for transportation. At the same time the efficiency in utilization of rolling stock would be less than it is now, as there would be many instances in which empty cars would stand idle at junction points while waiting for a load.

If we except narrow-gauge equipment, all freight cars in the United States are built to conform to general specifications, which make it certain that any car can be used upon any railroad in the country, in conjunction with any other freight car or locomotive. The same is true, one may add, of passenger cars, and of locomotives, passenger or freight. Upon this physical basis, two sorts of operating arrangements have grown up.

Private Cars

The first has to do with what is known as the privately owned car. On January 1, 1918, there were approximately 200,000 freight cars in the United States owned by private interests, which was in the neighborhood of 8 per cent of all freight-car equipment then in use. These private cars were nearly all of special types—refrigerator, tank, stock, and coal cars largely predominating.

The origin and development of the use of private cars is succinctly described by the Interstate Commerce Commission as follows:

> "In the development of freight traffic in the different sections of the country it became evident that many commodities might be transported to much greater advantage in certain kinds of cars especially adapted to the character and peculiar qualities of the particular articles, than in the ordinary cars furnished by carriers. The latter were slow to respond to the demand for improved cars of special pattern, and frequently failed to provide them. Hence, by agreement between shipper and carrier, the former undertook to provide his own cars for the transportation of his particular articles. In analogy to the custom that prevailed between connecting carriers in respect to the use of each other's cars, the railway company became the hirer of the shipper's cars, paying for their use on the basis of a certain amount per mile on the loaded, or loaded and empty, movements. Initiated in a small way with respect to a few articles, the development has been in the direction of rapidly expanding use of private cars. It became necessary that some industries should have a constant and adequate supply of cars in order to conduct business on a large and economical basis. Articles of a perishable nature required prompt movement; some of such ar-

> ticles moved during short periods of each year; and there were demands for cars of special type from many different sections of the country which the carriers could not, or did not, supply. It has also come about that private cars now in use are not owned by shippers alone. They are owned in large numbers by separate corporations, who make their arrangements for the use of the cars with shippers, and procure from the railroads the payment of mileage. Many of these companies lease cars to railroad companies, receiving only the mileage allowance for their use; others lease their cars to carriers for an agreed monthly rental, the latter to keep the cars in repair; still others lease to shippers at an agreed rental per month, and credit the mileage earnings to the latter. Many of these concerns are car builders, who supply cars of special design to shippers on order. They have facilities for repairing their cars located at convenient points in different parts of the country." [1]

Inasmuch as private cars are not owned by railroad companies, there is no reason why any railroad should wish to prevent the passage of such cars from its own to the lines of a connecting carrier. Private cars, therefore, move with complete freedom over the railroads of the country without regard to system boundaries. Indeed, because of the excellent organization of some of the large car-owning corporations, and the close supervision which the operation of private cars receives, these cars probably move more rapidly and on the average with lighter loads than the equipment owned by the railroads themselves.

Cars Owned by Railroad Companies

In addition to their arrangements concerning private cars, railroads have adopted what they call car-service and per-diem rules relating to the interline use of cars in railroad ownership, as well as rules relating to repair of such equipment while on foreign lines. Railroad-owned cars are sent off their owners' tracks when the lading justifies such handling, almost as freely as privately owned cars. As a matter of fact, cars from California may be found any day in New England, and cars owned in New York may travel to Texas and back before they again reach the railroad to which they belong. A yard clerk in a busy Eastern terminal is likely to see, in the course of a month's experience, specimens of the freight equipment of every large railroad in the United States.

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[1] In the Matter of Private Cars, 50 I. C. C. 652, 657, 1918.

Distribution of Cars Between Carriers

The following table shows the average number of home cars and foreign cars upon the lines of the largest railroads in the country (railroads with annual operating revenue above $25,000,000) for the month of December, 1926, classified by regions:

OPERATING STATISTICS OF LARGE STEAM ROADS, DECEMBER, 1926

(Average number of cars on line daily)

District	Home	Foreign	Total
New England	39,285	57,426	96,711
Great Lakes Region	232,035	223,629	455,664
Central Eastern Region	377,733	243,960	621,693
Pocahontas Region	71,407	27,035	98,442
Southern Region	205,107	130,801	335,908
Northwestern Region	243,933	101,869	345,802
Central Western Region	237,823	128,362	366,185
Southwestern Region	98,966	110,411	209,377

The proportion of railroad cars located upon the line of the road which owns them varies considerably from time to time. During the period of federal operation of American railroads (December 28, 1917, to March 1, 1920), the percentage fell very low. Indeed, on November 1, 1920, nine months after the relinquishment of federal control, only 31.3 per cent of railroad cars were "at home." Under restored private management the percentage rose rapidly, until by July 15, 1921, 74 per cent of the cars were to be found upon the line of the company which owned them. At the present writing 60 per cent of railroad cars are on the owning company's line—a figure which may, perhaps, be taken as normal.

Under conditions of perfect equilibrium, every carrier should have upon its line at all times the same number of cars that it owns, in spite of the fact that a substantial portion of its equipment can always be expected to be upon the lines of other carriers. While some of its own cars will be away, this number will be balanced by the foreign cars on hand. Unfortunately this state of perfect equilibrium does not always exist, and constant effort is required to maintain a distribution of equipment which corresponds, even roughly, to the relative investment of different carriers in equipment for the transportation of freight.

Carriers properly insist upon three things in connection with the use of their cars. The first condition attached to the free interchange of equipment is that reasonable attention shall be paid to the repair of railroad cars while in foreign service. A second condition is that cars shall be returned to the home road as rapidly as is consistent with the economical handling of through freight and with the restriction of empty car mileage to a reasonable figure. The third condition is that a fair rental shall be paid to the road which owns equipment by each other carrier which uses that equipment. These three conditions are expressed respectively in what are known as the master car-builders' rules, the car-service rules, and the per-diem rules.

Interchange Rules of the Master Car Builders' Association

The code of rules governing repairs to freight cars interchanged between railroad companies is published by the Master Car Builders' Association. It defines the conditions under which railroads may refuse to receive cars from their connections, locates the responsibility for repairs as between owning and using companies, and contains a detailed list of prices at which different sorts of repairs may be charged.

In general, owners of cars are responsible for repairs made necessary by ordinary wear and tear. This includes, for instance, the repair of defects due to wear of couplers and to corosion of steel parts of the car. It also includes the repair of air hose burst from air pressure, the replacement of missing or worn-out parts of brakes which have failed under fair treatment, and the cleaning of triple valves that have not been tested within the previous twelve months.

The using road, on the other hand, is responsible for damages of any kind to body, truck, brake apparatus, etc., of the car due to unfair usage, derailment, or accident, for damaged sills, flat wheels caused by sliding, for material missing from trucks offered in interchange except journal-box lids and nuts, and for other repairs and replacements of this general class.

It is evidently desirable for carriers to agree upon the allocation and cost of repairs, as well as upon procedure for the settlement of disputes regarding repairs. This is, indeed, an essential part of a policy looking to the free interchange of equipment between connecting carriers.

Code of Per-diem Rules

The code of per-diem rules is published by the Car Service Division of the American Railway Association. The rules are based upon the principle that a road which uses a railroad freight car shall pay a rental to the owner of the car, and that this rental shall be a certain amount per day (now $1), not a certain amount per mile run, as is still the practice in the case of private cars and of passenger cars.[1]

There is a real difference in interest with respect to the level of per-diem charges between railroads, like those in New England, which regularly have more cars upon their lines than they own and so have always more money to pay in per-diem settlements than they have to receive, and roads like the grain carriers, which are as regularly short of equipment. The former group wishes per-diem rates to be low; the latter desires them to be high. On the principle of charging a rate per day, however, railroads are pretty well agreed, mainly because this system insures revenue to the owning road when a car is stationary upon a foreign line, as during the period of loading or unloading, as well as when the car is in motion. The daily basis, for the same reason, stimulates carriers to require prompt return of foreign as well as of domestic equipment from shippers. A road which is forced to pay for the use of foreign freight cars only when these cars are in motion may, without loss to itself, be extremely lenient with shippers with respect to free time. Cars will be used as warehouses under these conditions and the efficiency with which railroad equipment is employed will decline.

The daily, or per-diem, basis of settlement for the use of foreign freight cars went into use upon the principal railroads of the United States in 1902, after much painful experience with the plan of mileage payments. It has given sufficient satisfaction so that a return

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[1] A tabulation of the per-diem rates in force as between American railroads from 1902 to the present day gives the following result:

Date When the Rate Became Effective	Rate
1902	20 cents per car per day, regular 80 cents penalty
1906 (July 1)	25 cents per day, regular 75 cents penalty
1907 (July 1)	50 cents per car per day
1908 (March 1)	25 cents per car per day
1910 (March 1)	
March to July	30 cents per car per day
August to February	35 cents per car per day
1913 (January 1)	45 cents per car per day
1917 (January 1)	75 cents per car per day
1917 (March 31)	60 cents per car per day
1920 (March 1)	90 cents per car per day
1920 (November 1)	100 cents per car per day

Proceedings of the American Railway Association; see also "In the Matter of Private Cars," 50 I. C. C. 652, 665, 1918.

to the old mileage system has never been seriously proposed. The present rates of $1 per car per day has been in effect eight years.

Code of Car-service Rules

In addition to the per-diem rules, railroads have agreed upon what is known as a code of car-service rules. These rules relate to the handling of cars and include the following provisions:

> "1. Home cars shall not be used for the movement of traffic beyond the limits of the home road when the use of other suitable cars under these rules is practicable.
>
> "2. Foreign cars at home on a direct connection must be forwarded to the home road loaded or empty, except as provided in paragraphs (e) and (f). If empty at junction with the home road and loading at that point *via* the home road is not available they must, subject to Rule 5, be delivered to it at that junction, unless an exception to the requirement be agreed to by roads involved. Otherwise, cars under this rule may be:
>
> "(a) Loaded *via* any route so that the home road will participate in the freight rate, or
>
> "(b) Moved locally in the direction of the home road, or
>
> "(c) Moved locally in the direction from the home road, or delivered to a short line or a switching road, if to be loaded for delivery on or movement via the home road, or
>
> "(d) Delivered empty to home road at any junction point, subject to Rule 5, or
>
> "(e) Delivered empty to road from which originally received under load at the junction where received, if such road is also a direct connection of the home road, or
>
> "(f) Returned empty to the delivering road when handled in switching service and owner is not a direct connection in that switching territory.
>
> "3. Foreign cars at home on other than direct connections must be forwarded to the home road loaded or empty. Under this rule cars may be:
>
> "(a) Loaded *via* any route so that the home road will participate in the freight rate, or
>
> "(b) Loaded in the direction of the home road, or
>
> "(c) Moved locally in an opposite direction from the home road, or delivered to a short line or a switching road if to be loaded for delivery on or movement *via* the home road, or to a

> point in the direction of the home road beyond the road on which the cars are located, or
>
> "(d) Delivered empty to road from which originally received, at the junction where received, if impracticable to dispose of them under paragraph (a), (b) or (c) of this rule."

The code of car-service rules has only incidental and indirect connection with the payment for the use of cars. Its purpose is to secure the return of cars to the owning road by direct regulation, as contrasted with the indirect pressure provided by the per-diem rate. The per-diem rules are well enough so far as they go, but the use of a railroad freight car in a time of active business is worth more than the per-diem rate of one dollar a day; and so long as this is true, a charge of one dollar will fail to bring equipment home unless supplemented by more positive direction. The intent of the car-service rules is to supply this direction by requiring railroads to keep freight cars moving in the general direction of the home road after the original transportation for which they have been employed is accomplished.

Reference to the per-diem rules will show that the same committee of the American Railroad Association that is charged with the administration of the per-diem agreement is empowered to investigate suspected violations of the car-service rules and to prescribe appropriate penalties. The car-service rules are more ancient than the penalties, but the latter, of course, make the enforcement of the rules easier.

European Regulations for the Handling of Cars

We have mentioned earlier in this chapter the convention for car interchange which is in force upon the continent of Europe. The name of the organization created by this convention is the International Car Union, and its membership includes the principal railways of Austria, Belgium, France, Germany, Italy, Jugo-Slavia, Poland, Switzerland, and Czecho-Slovakia, as well as those of a number of smaller countries. Meetings are held once in five years, and there is a permanent organization which sits continuously, although with slight powers.

On the whole, the regulations for the handling of cars upon the continent resemble those in force in the United States. Like the American rules, the statutes of the International Car Union provide for per-diem rentals, car service, and car repairs. The car-service rules are so similar to the American that no separate discussion of them is necessary. The per-diem rates are as follows:

> "Fr. 0.80 for each of the three first days.
> " 1.00 for each of the fourth, fifth, sixth, and seventh days.
> " 1.50 for each of the eighth, ninth, and tenth days.
> " 2.00 for each of the eleventh, twelfth, thirteenth, fourteenth, and fifteenth days.
> " 2.50 for each additional day."

These rates are lower than those in force in the United States, even after allowance is made for the smaller size of cars. As for repairs, the principle is laid down that repairs shall be performed by the owning road, except minor repairs designed to place a car in running condition. No list of prices is incorporated in the agreement, but there are provisions governing the requisition and shipment of repair parts by the owner of the car to the railroad when minor repairs are to be made.[1]

Summary of Forms of Operating-coöperation Between Carriers

We have now mentioned through billing, through rate-making, current practices in interline revenue settlements, the use of private cars, regulations regarding the repair of railroad equipment upon foreign lines, per-diem and car-service rules. These practices all imply extensive coöperation between independent American railroads, and while the list of instances might be extended, enough examples have probably been presented to justify the statement, made at the beginning of the chapter, that the railroads of the country function, to a noteworthy extent, as a single railroad system in spite of the diversity of ownership of the different parts. There is, of course, something to be said upon the other side. Thus there is much wasteful cross and roundabout hauling which might be avoided if railroads were actually under a single ownership, and there is frequently uneconomic use of terminals. There is, again, costly duplication of service by competing companies, involving the running of two or more trains between identical termini when only one is needed. Yet in spite of such qualifying facts, railroad operation in the United States is characterized, in general, by a smooth and willing coöperation between railroad lines which is a distinct achievement for American practice.

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[1] Bulletin des transports internationaux, 1925, vol. xxxii, no. 12, p. 194.

American Railway Association

The largest formal operating organization of railroads and railroad men is the American Railway Association. This society includes in its membership 594 railroads (on March 8, 1927), operating 323,355 miles. Most of the participating lines lie in the United States, but there are members also in Canada, Cuba, Japan, Mexico, Philippine Islands, Porto Rico, and Yucatan. The present name of the Association dates from 1891. The organization itself goes back to the so-called "time conventions" which met at least as early as May, 1872. Time conventions were conferences of connecting or competing railroads to consider changes in train schedules that affected more than one line, or to regulate "speed wars." There were changes and consolidations among these conventions, resulting finally in the combination, in 1886, of the largest two conventions, the General Time Convention of the northern roads, and the Southern Time Convention operating south of the Ohio and Potomac, into an inclusive "General Time Convention," comprising roads both north and south. This was the immediate predecessor of the American Railway Association. The change of designation to the name now used came five years after the combination of 1886.

The functions of the American Railway Association can be best expressed, first, by a reference to the more important things which it has done, and, second, by a list of its principal committees.

Among the most important accomplishments of the Association have been the following:

1. The adoption of a standard time. As a result of the initiative of the Association, the railroads of the United States and Canada, on November 18, 1883, put into practical operation a detailed system of standard time.

Prior to that date every railway ran its trains by the local time of the city in which its headquarters were located or by some other arbitrary standard. There were over fifty standards of time in use, differing from each other by odd numbers of minutes. On the day named, these were resolved into four standard times, based upon Greenwich meridian time, with differences of an even hour between them. This system has since been widely adopted outside of the railroad field.

2. The formulation of standard codes of train signals, train rules, block-signal and interlocking rules, car-service, per-diem, and demurrage rules, track-storage rules, rules governing the receipt, stowing, etc., of less than carload freight, switching-reclaim rules, etc., etc.

3. The approval of standard sections of rails, standard dimensions of box cars, standard heights of drawbars and location of hand holds, standard gauge of tracks, standard freight couplers, standard requirements for heating passenger trains, etc.

Committees of the American Railway Association

The work of the Association is carried on through seven grand divisions, each functioning by means of a number of committees. These divisions are as follows:

> "Division I—Operating. Includes committees on operating rules, grade crossing protection, and forms for reporting operating statistics, and the following sections: medical and surgical section (7 committees); protection section (5 committees); freight station section (11 committees besides sectional committees); safety section (5 committees); telegraph and telephone section (20 committees and 10 sub-committees).
>
> "Division II—Transportation. Works through 9 committees, including committees on car service, demurrage, and per diem.
>
> "Division III—Traffic. Four committees, including committee on standard containers and one on weighing and inspection of freight traffic.
>
> "Division IV—Engineering. Includes construction and maintenance section (28 committees); electrical section (16 committees); signal section (15 committees).
>
> "Division V—Mechanical. Twenty-nine committees, concerned with the construction and repair of railroad equipment, safety appliances, fuel conservation, and locomotive utilization.
>
> "Division VI—Purchases and Stores. Twenty-one committees.
>
> "Division VII—Freight Claims. Eight committees, including those on loss and damage rules, overcharge rules and freight claim prevention."

Mention should also be made of a Freight Container Bureau and of a Committee on Automatic Train Control which function under the American Railway Association but are not assigned to any division.

Meetings are held annually, and technical matters of interest to members are thoroughly discussed. In so far as possible the Association avoids contentious matters—at least matters in which the financial interests of members are likely to conflict. It follows in this respect the advice of its former president, Mr. H. S. Haines, and probably has this policy to thank for much of its success.

The scope and membership of the American Railway Association was considerably enlarged in 1919, and the Association has since pursued a policy of expansion. While there are still a few societies of operating men outside of its organization, its influence within the United States is unquestionably supreme.

International Railway Association

The only international association in which American railways are members, except in so far as the American Railway Association itself is international, is the International Railway Association. This organization was established in 1885, under the name of International Railway Congress Association, with the general purpose of promoting railway progress and development. Its activities were interrupted by the war, and the publication of its valuable bulletin was suspended. In 1918 the International Railway Congress Association was terminated, its place being immediately taken by the present body, acting with substantially the same powers and purposes.

The membership of the International Railway Association is now made up of railway administrations from thirty-five countries, including Great Britain, France, Italy, Spain, Portugal, Sweden, the Netherlands, Norway, Denmark, Switzerland, Greece, Greater Serbia, Rumania, and Luxemburg, in Europe, Argentine, Brazil, and Chile in South America, Japan, Mexico, and a number of small states in Central America and elsewhere. Before the World War Germany, Russia, and Austria-Hungary were members.

The present headquarters of the Association are at Brussels. Meetings are held every five years, sometimes in one country, sometimes in another. The last meeting (1925) was in London, England; the previous one (1922), in Rome, Italy.[1]

Through these meetings and through the Association bulletins a good deal is done to acquaint members with railway practice in other countries than their own, and the very considerable attendance at the sessions is evidence of their success.

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CHAPTER XXIII

THE PROBLEM OF TERMINALS

Peculiarities of the Railway Terminal Problem

The peculiarities of the terminal problem arise, first, out of the difficulty and expense incurred in conducting traffic into, through, and around great cities, and, second, in the monopoly power which the possession of a unique and nonreproducible location gives to the common carrier which is so fortunate as to enjoy it.

In the large city, the service of transportation competes for space with other intensive uses of land in two ways: first, it must displace other facilities in order to maintain the station and the yard, storage, or industrial tracks requisite for rail service; and second, it must occupy the city streets in seeking access to and egress from the points where the road haul begins. It is a common error to assume that transportation is finished when the "terminal" is reached. This is true only when the word is understood to mean place of utilization; the point usually called "terminal" marks rather a change in the character of the conveyance than a cessation of movement.

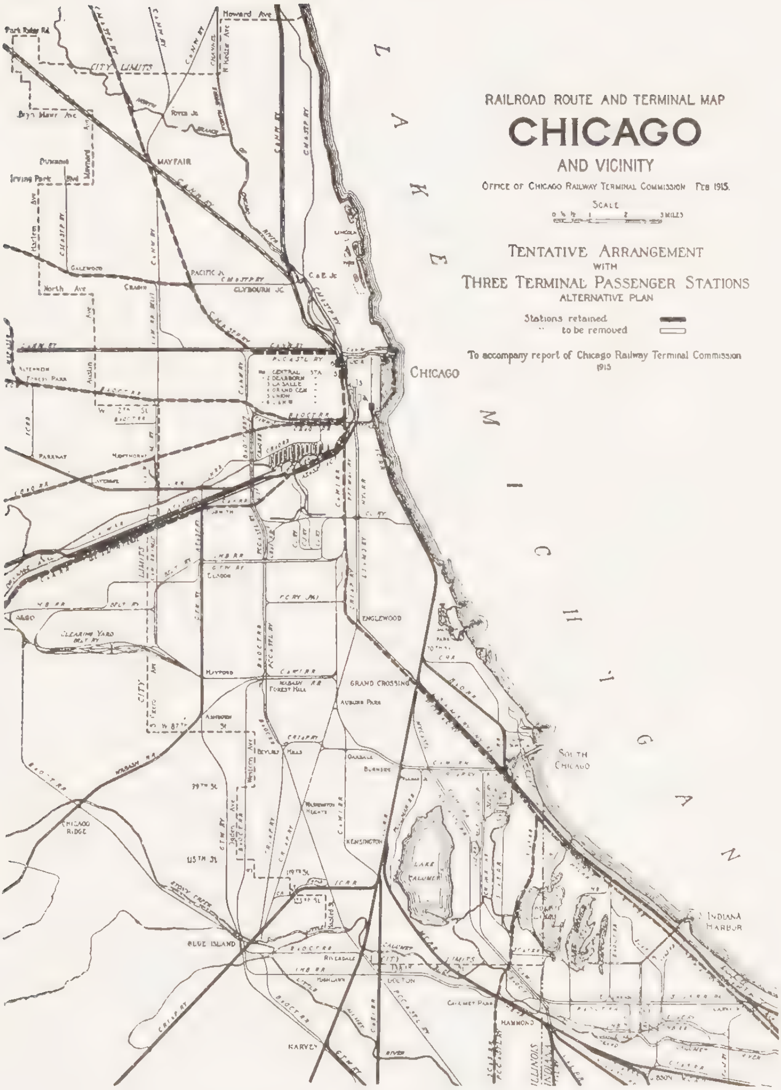
Chicago

Our largest city terminals in the United States are those in Chicago, St. Louis, and New York.

The map which is reproduced on page 413 is taken from the report of the Chicago Railway Terminal Commission of 1915. It shows the tangled network of rail lines entering Chicago from the north, west, and south, and the tendency of these lines to focus in downtown Chicago, where the passenger stations and freight trains are placed adjacent to the business district. There is no natural barrier to be overcome, for the Chicago River, which alone might deserve such a designation, is bridged at so many points that it interferes but slightly with the flow of traffic; but there is evident danger of congestion.

St. Louis

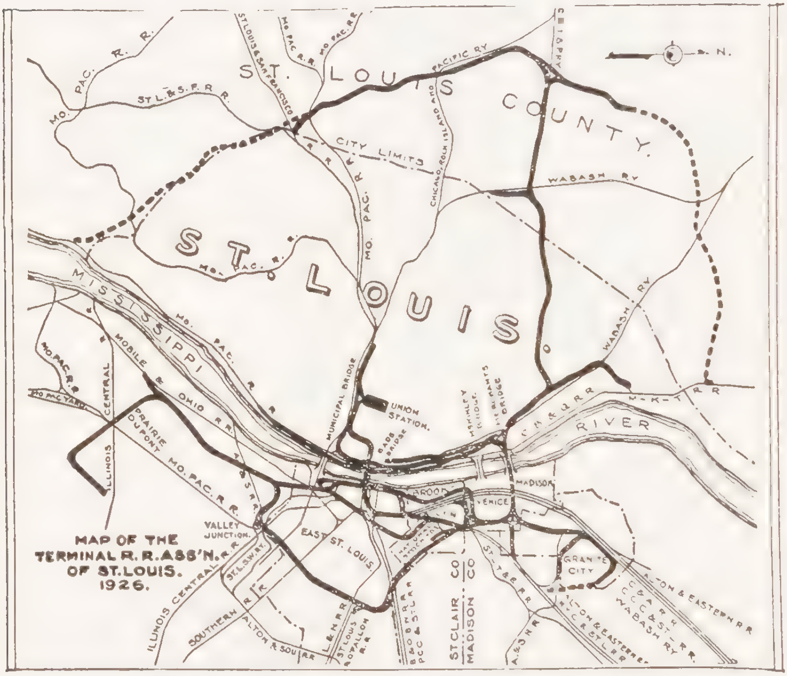
The situation at St. Louis is even more involved than at Chicago because full railroad service is rendered at St. Louis on both sides of the waterway (the Mississippi River), along with a heavy interchange across the waterway; whereas, at Chicago, the service is con-



Terminal Map of Chicago [1]

[1] Chicago Railway Terminal Commission, Preliminary Report, 1915, p. 37.

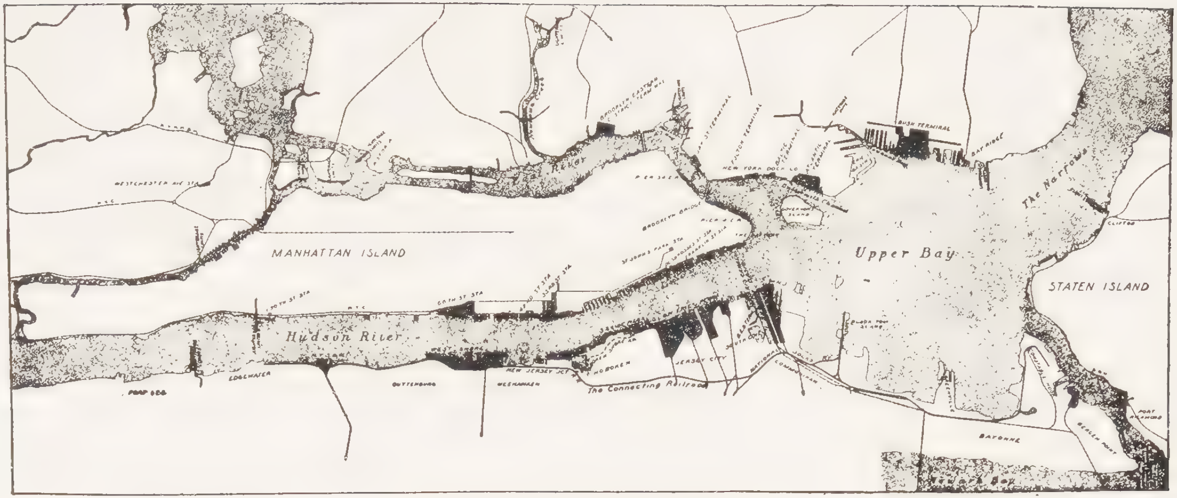
fined to only one shore of Lake Michigan. The best recent discussion of the terminal problem at St. Louis is to be found in a report submitted in 1922 by a committee of engineers, to the St. Louis Chamber of Commerce. The map shows the principal railroads entering the city and the interchange points in use in 1922. The complexities of terminal handling are suggested by the committee's remark that trains were made up in more than forty individual classification yards and that cars passing between railroads were interchanged at more than one hundred interchange points in the St. Louis terminal district. During the year 1926 there were approximately 500,000 carloads of local traffic loaded and unloaded by industries on the terminal, and 2,000,000 loaded cars interchanged with connecting carriers. In 1927, at Chicago, the carload movements amounted to 21,000 cars per day.



Terminal Map of St. Louis

New York

The map of New York Harbor illustrates the case of a terminal with controlling topographic peculiarities, which must, nevertheless,



Terminal Map of New York[1]

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[1] The New York Harbor Case, 47 I. C. C. 643, 650, 1917.

provide facilities for the receipt, delivery, and transfer of a volume of freight and passengers which exceeds even that reported at Chicago and St. Louis. The center of business in New York is upon Manhattan Island. With one exception, that of the New York Central Railroad, none of the rail carriers serving the city have rails upon Manhattan. One of them, the Baltimore and Ohio, operates a terminal in Staten Island, but most of them end upon the New Jersey shore, between Guttenburg and Constable Hook; where freight and passengers are transferred by lighter and ferry to Manhattan and to Brooklyn piers, and then, as necessary, by dray or by other systems of intramural transportation, to their ultimate destinations. There are 13 railroads with terminals upon New York Harbor, of which eight have terminals in New Jersey, one in Staten Island, one in Manhattan Island, and three in Brooklyn in upper New York. Mention should be made also of 91 steamship lines engaged in foreign and 15 in local trade, which bring freight and passengers to New York for terminal delivery.

These three cities, Chicago, St. Louis, and New York, are selected for special mention because they offer extreme examples of concentration of the business of carriage in congested population areas. Other terminal situations which differ from these only in degree are, however, to be found in many other communities, so that policies devised to overcome terminal difficulties are, in general, of considerable economic importance.

Competitive Principle Should Not Be Controlling

The problem which confronts the line carrier at Chicago, St. Louis, or New York, or, indeed, at any of the larger cities, is partly a competitive one. It concerns, that is to say, the location of rail terminals at such points, and their operation in such fashion and at such rates as to attract as large a portion of the traffic entering, leaving, or passing through a population center to its rails as can be handled at a profit. But the larger problem is not competitive. It is rather that of handling a large and varied traffic under conditions of peculiar difficulty so that the high terminal cost of transporting people and goods from outside the city through or to ultimate destination in the city, or in the reverse direction, may be controlled. The solutions to the two problems may be, but they frequently are not, identical; ultimately, however, the broader point of view must prevail.

Passenger Terminals

The simplest form of rail terminal service is that provided for passengers, a statement which holds true in spite of the elaborate structures erected for advertising purposes in some cities or to gratify the æsthetic sense or the civic pride of the communities in which the terminals are placed. Passenger terminal service is simplified by the fact that passengers load and unload themselves, and also by the circumstance that intramural systems of local transportation are more fully developed for the carriage of people than for the carriage of goods.

In the case of passenger movements, the fact that the terminal of the line haul carrier is not the final destination of the traffic which flows into it is more than ordinarily obvious, and this, perhaps, is the matter of most importance in determining the location and administration of such facilities.

The so-called passenger terminal marks a change in method of conveyance, as from rail to electric car, or from motor bus to pedestrian locomotion. The point at which this change takes place should be chosen so as to produce the greatest speed and economy for the passenger with respect to the total transit. In large cities it is generally impossible for the machine which accomplishes the line haul to deposit the individual within, say, a quarter of a mile from his destination. It is desirable, rather than to attempt this, to carry suburban passengers into the regular channels or arteries of the intramural scheme of transportation. It has been suggested in Chicago that all suburban trains should pass through a subway loop instead of stopping at any passenger terminal, or, which would accomplish the same purpose, that suburban steam trains be transferred to city elevated tracks at the circumference of the elevated system. It is to be doubted whether either of these suggestions offers a practical solution to the Chicago problem, but the fact that they are made, as well as the present success of the elevated, motor-bus, and of some rail lines which bring passengers into the city and deposit them at a great variety of unpretentious but convenient stations, indicates the character of the suburban service which gives best satisfaction in a congested district.

Through passenger transportation differs from suburban in that the transfer involved is, ultimately, at least, a change from one system of long distance carriage to another system of the same type. Moreover, the convenience of outgoing passengers appears to demand a longer time to board the train and to get settled therein with their baggage than is required for suburban traffic. The ideal here is probably the union terminal, used by all through lines, with ample accommodation for the placing of trains some time before the announced hour of departure. In weighing the advantages of such a terminal, it must, nevertheless, be remembered that a very large proportion of passengers leaving through trains at cities like Chicago or St. Louis or New York does not go beyond the city immediately, but makes use before it leaves, of surface, elevated, or subway cars, cabs, buses, automobiles, or other conveyances. The through passenger station or stations should be convenient to these facilities and to the business or hotel or theater district to which the passengers resort, and need not be located with regard to the center of population of the city as a whole.

Basis for Comparison of Passenger Terminal Facilities

When the Interstate Commerce Commission considered the relative merits of two sites for passenger terminals in Los Angeles, California, in the year 1925, comparison was made on the following ten points:[1]

1. Adequacy of site and the facilities which are to be provided thereon;
2. Accessibility of the station from all portions of the city and suburbs by private vehicles, buses, and interurban lines;
3. Convenience of the station to passengers and for the handling of baggage, express, and mail;
4. Segregation of passenger and freight traffic;
5. The effect of the station site as a barrier between parts of the city;
6. Consonance of the plans with the civic plans of the city;
7. New money cost of the total investment under the different projects;
8. Relative expense of operation;
9. Length of time necessary to carry out plans;
10. Relative possibility of eliminating grade crossings.

This enumeration will serve to summarize the discussion in the preceding paragraphs by indicating upon what, in a particular case, the attention of the parties was laid.

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[1] Los Angeles Passenger Terminal Cases, 100 I. C. C. 421, 435, 1925.

Analysis of Freight Traffic

Freight terminals are called upon to handle:

(1) Through traffic;
(2) Less than carload local traffic;
(3) Carload local traffic.

In October, 1920, the carloads of freight passing through the terminals at St. Louis were as follows:

NUMBER OF CARLOADS OF FREIGHT HANDLED AT ST. LOUIS IN OCTOBER, 1920 [1]

	East Side	West Side	Total
Through carloads brought in by all lines for through movement	60,201	20,030	80,231
Cars loaded at freight houses	6,060	10,724	16,784
Cars loaded at industries and team tracks	15,356	12,827	28,183
Cars unloaded at freight houses	5,723	5,823	11,546
Cars unloaded at industries and team tracks	22,838	30,970	53,808
	110,178	80,374	190,552

About 42 per cent of the St. Louis traffic in the selected month consisted of through traffic. The balance either originated at or was destined to St. Louis itself.

A similar but more recent analysis of traffic at Chicago reveals the following movement:

CAR MOVEMENTS IN CHICAGO TERMINAL DISTRICT, 1925 [2]

1. Loaded local car movements to and from industries.

	Cars	
Inbound	6,000	
Intramural to Chicago	3,000	
Outbound	3,000	
Total		12,000

2. Loaded local car movements to and from freight houses and team tracks.

Inbound	2,000	
Intramural to Chicago	1,000	
Outbound	2,000	
Total		5,000

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[1] Smith, "The Railroad Freight Terminal Problem in St. Louis," Proceedings of the American Society of Civil Engineers, vol. xlix, no. 7, September, 1923, p. 1477.

[2] *Railway Age*, March 7, 1925, p. 561. Through transfer movements are counted twice, once inbound and once outbound. In order to determine their relative importance they should be counted only once, and, therefore, the total is divided by two.

3. Loaded through car movements transferred between railroads.

Inbound	4,000	
Outbound	4,000	
Total	8,000	
	2	4,000

In the Chicago area in 1925, only 19 per cent of the car movements neither originated at nor was destined to points in the district.

Through Traffic

The data just presented suggests that the through freight traffic of our large cities constitutes less than half and probably a much smaller proportion of the whole which they receive. Of the three types of traffic mentioned, it is, also, that which presents in principle the least difficulty. This is partly because its volume is less than is the volume of local traffic, but also partly for the reason that through traffic makes no characteristic use of the facilities of an intermediate terminal, although, of course, it may sometimes be the subject of some manufacturing or commercial operation which has to be regarded. Through traffic comes to a terminal because lines of communication lead through that terminal, not because the latter has any drawing power in so far as through traffic is concerned. The best way to treat it is to keep it out of the terminal altogether, which is, perhaps, best accomplished by the belt line, a railroad that encircles the town at some distance from the center, intersecting the converging main routes and making it possible to transfer freight from one route to another without entering the area of greatest congestion. The sorting of incoming and outgoing freight under such a system is accomplished at one or more "clearing yards" where trains are broken up and cars are regrouped according to the railroads to which they are to be delivered.

Freight Traffic, Local, Less Than Carload

Less than carload local freight cannot be kept out of the terminals. One of the main functions of the terminal is, indeed, the receipt of traffic of this type from the transportation organizations which bring it to the city, the easy transfer of the freight to other types of conveyances, and its final delivery to the ultimate consignee at his place of business or residence. There are several steps involved in this operation and a number of interesting questions arise.

Generally speaking, the appliances for the intramural transportation of less than carload freight include the belt line, the subway, and the motor-truck. In New York, the presence of considerable bodies of water between Manhattan Island and the New Jersey and the Brooklyn shores permits the use of barges or lighters for a portion of the intramural haul, thus relieving the city streets. In Chicago, some use is made of the Chicago River, but more of the tunnel property of the Chicago Warehouse and Terminal Company. This independent company operates a narrow-gauge railroad system through a tunnel, seven and a half feet high and six feet wide, which extends under nearly all of the steets of the downtown district, and is connected by elevators with the freight floors of the railroad stations, as well as with a number of commercial houses and industries, and with surface stations maintained by the tunnel company. The subway has never been profitable, but it performs a notable service in carrying freight in the most congested areas of the city.

Trap Cars

The name of "trap" or "ferry" is applied to a car placed at an industry or commercial house having a private siding and then loaded by a shipper with less than carload shipments, and hauled by a carrier to a local freight or transfer station for handling and forwarding of contents. It is also applied to a car loaded with less than carload shipments which is hauled to and placed upon the private track of an industry or commercial house by the carrier from a local freight or transfer station. Service of this type is usually rendered free of charge if a prescribed minimum is loaded into the car; if the stipulated minimum is not loaded, charges are named, usually upon a per-car basis.

Trap-car service was originally instituted in order to enable carriers to compete for the less-than-carload business of firms which were at a distance from their freight houses in a city, although near to the freight house of some competing line. It has been continued partly because of the indirect advantage of relieving congested main freight stations, and the practice has been extended in certain instances. Such an extension occurs, for instance, when carriers establish freight substations at convenient points within their switching limits, from which less than carload shipments are transported to main freight stations, or transfer stations, for the rehandling and forwarding of contents, thus multiplying the points at which railroad service ends and other forms of transportation begin.[1]

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[1] Trap or Ferry Car Service Charges, 34 I. C. C. 516, 1915.

Truck Service in City Streets

The greater part of local less-than-carload freight makes use of city streets, and it is there that carriers create most congestion. The crowding occurs, in the first place, because city thoroughfares are not planned to accommodate an extensive vehicular traffic and cannot be easily widened as such traffic grows. It occurs also because the business of city freight transportation is usually directed by a large number of independent and uncoördinated trucking companies. This leads to duplication of facilities and over-occupation of street space, and also to irregular and unplanned arrival of trucks at the rail freight houses. Railroad freight terminals must be larger under such a system than they would need to be if the rail carrier were not required to find storage space for a portion of their inbound freight. There is no question but that motor-truck service is immensely more efficient than the service that the old horse-drawn vehicles could supply for the handling of traffic to and from the rail; and the efficiency of modern service has grown with the adoption of special types of trucks, such as those equipped with demountable bodies, or trucks fitted to handle so-called "unit containers" to be transferred directly between motor-vehicle and railroad car without rehandling of the contents, or trucks with cranes for hoisting, or other special operating machinery. Developments of this character can be carried a long way with excellent results, while the superior size and power of the motor-truck as compared with its horse-drawn competitor itself gives it an advantage in the business we are considering.

It is highly doubtful, nevertheless, whether the most efficient appliances that can be devised, within the limits of reasonable expenditure, will serve to meet the physical requirements of less than carload terminal handling in our largest cities, without an improved organization of intramural freight transportation. Fortunately, some steps have already been taken toward this end, and more may be expected.

Off-track Stations

Among the devices for accomplishing a better control of city movement is what is known as the "off-track station."

The best known instance of the use of "off-track stations" for the terminal delivery of freight is found in the city of St. Louis. The practice in St. Louis originated in 1906, when, for the first time, the rates to St. Louis, upon the west bank of the Mississippi River, were made the same as the rates to East St. Louis, upon the east bank, to and from points in the territory east of the Mississippi and north of the Ohio River and outside a radius of one hundred miles from St. Louis. This rate adjustment increased the volume of traffic moving into St. Louis to such an extent that the terminal facilities of the city became unable to take care of it. Under these circumstances, the railroads connecting eastern points with East St. Louis arranged with transfer companies to open St. Louis stations in buildings not reached by the rails of any carrier, and to truck to and deliver at these stations freight which had reached St. Louis by rail. Subsequently, the western lines which had rail terminals of their own in St. Louis made similar arrangements with the same transfer companies. The St. Louis rate was applied to the off-track freight station, as well as to the rail terminal in St. Louis, leaving only the drayage costs to and from the stations to be borne by consignees or shippers. The transfer companies quoted rates, and they collected charges on shipments and remitted the amounts to the rail carriers. They did not, however, make out bills of lading, but issued, instead, dray tickets which shippers could surrender to the carriers in exchange for bills of lading.[1] In 1923 the Columbia Transfer Company handled approximately 50 per cent of the less-than-carload freight originating in or terminating at St. Louis and passing through the East St. Louis freight houses. It also handled a considerable tonnage of St. Louis business through its houses on the west side of the river and practically all of the less-than-carload freight interchanged between railroads entering the St. Louis districts, the larger part of which crosses the river.[2]

Method of Handling St. Louis Traffic

A representative of the Columbia Transfer Company described its methods of operation in 1926 as follows:

> "We have [the representative testified] 370 semi-trailers and 97 tractors, as well as some trucks.
>
> "There are almost four trailers to each tractor. These trailers are backed into the railroad platforms, and the freight is trucked direct from car onto the trailers, the trailers in that manner increasing the platform capacity of the railroad platform. . . .
>
> "As soon as a trailer is loaded a tractor engages same and it is taken at once in the case of interchange [traffic] to the outgoing line where the freight is unloaded, checked, and receipted for.
>
> "In the case of city freight, it is taken to the off-track station nearest

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[1] St. Louis Terminal Case, 34 I. C. C. 453, 456, 1915.

[2] *Railway Age*, June 20, 1923, p. 1690.

> to which the consignees are located having freight with which that trailer is loaded. At each one there is filed routing instructions by the different consignees who receive any quantity of freight at all, indicating at what depot they desire to receive their freight. . . . The trailers are moved under a dispatching system handled from offices in St. Louis and East St. Louis.
>
> "In the case of the outbound freight from the St. Louis shippers, it is brought to the off-track freight station by the shippers. . . .
>
> "Under the same dispatching system previously mentioned the freight is transferred from these outbound stations to the outgoing rail lines. The different freight depots, rail freight depots, at East St. Louis and St. Louis are from one to three miles apart. The running time of the tractor-trailer equipment between these stations is on an average fifteen minutes. It will therefore be seen with what dispatch this freight is handled."[1]

Off-track Stations in New York

A system somewhat similar to that in use in St. Louis has been operated during the past few years by the Erie Railroad in New York. The rail terminal of the Erie is in New Jersey and its ordinary delivery to Manhattan Island is by lighter to New York piers. The Erie has, however, established three inland stations located at various points in New York in conjunction with warehouses operated by the United States Trucking Corporation, or its subsidiary, the Independent Warehouses, Inc. Under prior arrangement made between the trucking company and the consignee, freight which is unloaded onto the trucks of the transfer company is either delivered direct to the warehouse of the consignee or, at his option, to one of the inland station warehouses to which New York rates apply, just as the St. Louis rates apply to and from designated off-line warehouses in the City of St. Louis. The same system applies for movement in the reverse direction. Goods may be stored indefinitely in the inland warehouses at the usual warehouse rates and at consignee's expense and liability. The cost of trucking to the off-line warehouses under this plan is absorbed by the railroad, which thus, in effect, decentralizes its terminals without the necessity of large construction expenditures, while the cost of trucking between the warehouse and consignee's place of business remains, as before, with the consignee.[2]

There are indications that this form of terminal delivery will grow, although it is not yet common.

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[1] Motor-bus and Truck Investigation, *sup. cit.*, pp. 4565–4567, testimony Keene.

[2] T. C. Powell, in *Municipal and County Engineering*, August, 1925.

Store-door Delivery

Under both the trap car or the "off-station" system, the rail carrier accepts and assumes responsibility for delivery of freight at points considerably removed from freight houses where the line haul ends. The system of store-door delivery is a logical extension of this practice.

Store-door delivery has been standard in England for all except the heavier classes of goods—coal, iron, cement, etc.—for many years. Inbound freight is checked from car to platform, trucked to dray loading section, loaded and checked into railway drays or motor-trucks, and then sent out, over scales, into the town for delivery. Outbound freight is collected at consignee's door and follows a reverse procedure until loaded into the railway car. The railway companies' cartage vehicles collect and deliver 80 per cent of the miscellaneous goods traffic passing through their terminals.[1]

In Canada, a similar service is operated by the rail carriers under contracts or agreements with teaming companies acting as their agents. This service applies to traffic rated in the Canadian classification as fifth class or higher, less than carload and carload, with the exception of bulk freight or articles weighing 2,000 pounds or over per piece or per package.[2]

In the United States, store-door delivery is standard for parcel post and for express traffic, and store-door collection has been available to shippers of a limited number of commodities, through the activity of "forwarding companies" which collect less than carload shipments, consolidate them into carloads and present them to the line haul carriers at the railroad terminals for carriage at the carload rate. In at least two cases, moreover, railroads have undertaken store-door delivery upon their own account. One of these cases is that of the service established in Baltimore in 1867 by the old Philadelphia, Wilmington, and Baltimore Railroad and continued when that company was absorbed by the Pennsylvania Railroad in 1881. Similar facilities were also afforded at Baltimore, at one time or another, by the Baltimore and Ohio and competing water lines.[3]

A second instance of record is that at Washington, D. C., established by the Pennsylvania Railroad in 1883. In each case the purpose of providing store-door delivery was to relieve congestion at the railroad terminal. In 1913 the Pennsylvania attempted to withdraw the service at Washington, owing to increased expenses in connection with it, and to insistent agitation for its extension to other communities,[1] but was refused permission in view of the continuance of store-door delivery at Baltimore. The result was the elimination of the service at both places.[2]

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[1] *Railway Age*, February 2, 1924, p. 321.

[2] *Railway Age*, July 5, 1924, p. 30.

[3] Merchants and Manufacturers Association *v.* Baltimore and Ohio R. R. Co., 30 I. C. C. 388, 1914.

Advantages of Store-door Delivery

The advantages of store-door delivery are two: first, it enables the railroad to clear its freight houses promptly of incoming freight, and, second, it makes it possible to obtain a higher load efficiency in road vehicles by scientific loading and routing, with the result that traffic congestion upon the streets is likely to be reduced. A third advantage sometimes mentioned is that store-door delivery will permit the railroad to distribute less than carload freight by truck from inexpensive locations upon the outskirts of the congested area instead of bringing freight of this description to freight houses in the heart of town. The shipper who furnishes his own cartage naturally wishes his freight accepted or delivered at the station which is nearest to his industry. With store-door delivery, the shipper cares little where his traffic leaves the rail. This third advantage, however, is a somewhat doubtful one from the community standpoint, as the traffic formerly moving to the center of the city by rail is now thrown upon the city streets. The balance of gain or loss can only be determined by careful study of each individual case.

Disadvantages of Store-door Delivery

The most obvious disadvantages of store-door delivery are that it will bring the railroad into direct conflict with influential trucking interests in the great cities, and that it will deprive the shipper of the period of forty-eight hours' free storage which he now enjoys at the railroad freight house in the case of incoming goods. The first of these objections probably deserves little attention, but the second has some force. Certainly, if the consignee is required to construct the storage space which formerly the carrier provided, he may expect a concession in the rates on this account, or, at best, some equivalent advantage to offset his loss.

[1] Washington, D. C., Store-Door Delivery, 27 I. C. C. 347, 1913.

[2] Merchants and Manufacturers Association *v.* Baltimore and Ohio R. R., *sup. cit.* Judd and Detweile *v.* Baltimore and Ohio R. R., 30 I. C. C. 455, 1914. The Boston and Maine Railroad has recently inaugurated a store-door delivery service in Boston, Lowell, and Lawrence, Massachusetts.

Attitude of Carriers and Shippers

Generally speaking, the attitude of both shippers and carriers, with respect to store-door delivery, is friendly, but cautious.

Among the most carefully considered pronouncements by the former is that of the Atlantic States Shippers' Advisory Board in 1924. This board unanimously approved a report of one of its committees which commented favorably upon the possibilities of a store-door delivery plan, but declared that the principles named below must be observed if the system was to be successful:

1. The service must be optional.
2. The carrier must assume full responsibility to and from the store door.
3. The cost of store-door delivery should be borne by shippers and receivers.
4. The trucking charge must be just and reasonable—*i.e.*, at least as low as the present cost to shipper or consignee.
5. Store-door delivery should be established gradually.

The carriers' point of view, on the other hand, is expressed in a report based upon observations made by a group of prominent railway officials while attending the sessions of the International Railway Congress in London in 1925. The conclusions of these carrier representatives with respect to store-door delivery were as follows:

1. Cartage service should be limited in the beginning to the hauling of freight traffic (except perishable) which is handled over freight-station platforms.
2. Delivery limits should be established and zoning of the delivery area determined whenever conditions require.
3. Such costs of service should be determined as will form the basis for an average rate to apply to collection or delivery on each of the different railroads involved, within designated limits.
4. As an ultimate objective, a shipper or receiver accepting cartage service of a railway should do so on a 100-per-cent basis.
5. In all places served by more than one station, the cartage plan should be developed with a view to reducing the number of receiving and delivering operations.
6. The development of cartage service should not be allowed to alter the competitive situation as it applies to different roads.[1]

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[1] *Railway Age,* October 17, 1925, p. 701.

Carload Local Traffic

We now come to the last class of freight passing through city terminals—local carload traffic. Railroad freight originating at or destined to a terminal in carload quantities may be placed upon a public track accessible to trucks and may be subsequently handled much as less than carload freight is handled, except that the shipper or consignee, not the carrier, does the work. This is, however, a clumsy method. In the greater number of cases, the cars containing freight are placed upon private tracks built at the industries' expense and operated sometimes by the carrier and sometimes by locomotives owned by the industry.

Paragraph 9 of Section 1 of the Interstate Commerce Act reads as follows:

> "Any common carrier subject to the provisions of this Act, upon application of any lateral, branch line of railroad, or of any shipper tendering interstate traffic for transportation, shall construct, maintain, and operate upon reasonable terms a switch connection with any such lateral, branch line of railroad, or private side track which may be constructed to connect with its railroad, where such connection is reasonably practicable and can be put in with safety and will furnish sufficient business to justify the construction and maintenance of the same; and shall furnish cars for the movement of such traffic to the best of its ability without discrimination in favor of or against any such shipper. If any common carrier shall fail to install and operate any such switch or connection as aforesaid, on application therefor in writing by any shipper or owner of such lateral, branch line of railroad, such shipper or owner of such lateral, branch line of railroad may make complaint to the Commission, as provided in section thirteen of this Act, and the Commission shall hear and investigate the same and shall determine as to the safety and practicability thereof and justification and reasonable compensation therefor, and the Commission may make an order, as provided in section fifteen of the Act, directing the common carrier to comply with the provisions of this section in accordance with such order, and such order shall be enforced as hereinafter provided for the enforcement of all other orders by the Commission, other than orders for the payment of money."

This paragraph of the Interstate Commission law gives to the

Commission power to require a rail carrier to install a switch track connection, under certain circumstances and subject to certain limitations. It does not enable the Commission to force a carrier to build a side track upon private land, even when the shipper is prepared to share in the expense,[1] but it does make it possible for an industry which builds a spur track up to the railroad right of way to demand a connection with the main track and a reasonable operating service.[2] In most cases, however, no compulsion is needed, for the carrier which uses a spur thereby enlarges its terminals at slight expense, while at the same time it attaches the industry to itself in such a way as to give it a great advantage in soliciting the industry's traffic, both inbound and outbound.

Car Demurrage and Other Minor Problems

Traffic delivered at an industry spur or siding makes no use of the city streets and does not, therefore, give rise to the peculiar problems which characterize team track or less-than-carload railroad service. This does not mean, of course, that such traffic is not subject to terminal delay, occasioned either by slowness of shipper or consignee in loading or unloading cars or by inadequate trackage or poor facilities of the carrier for the sorting and placement of cars. Nor is the question of the rates to be charged upon such traffic free from difficulty. Car demurrage tariffs filed with the Interstate Commerce Commission and with state railroad commissions provide penalties for shipper's or consignee's delay in excess of a period of free time, usually forty-eight hours. These tariffs are of long standing and are accepted as correct in principles by all concerned. The Interstate Commerce Commission has ruled, also, that delivery at an industry spur within city switching limits is of the same nature as delivery at a team track or freight house,[3] and is covered by the published rates, a rule which disposes of another aspect of the case. Questions of discriminating treatment still occur, such as those referred to in Chapter XVIII, and when industrial tracks are extensive, or special service is needed, there is sometimes difficulty in determining just where the carrier's obligations of service end and where additional charges may properly be imposed. These matters lead to a more detailed consideration of traffic and regulatory practice than it is the purpose of this treatise to supply, and they will be, accordingly, passed by.

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[1] Ralston Townsite Company *v.* Missouri Pacific Railway, 22 I. C. C. 354, 1912.

[2] The "lateral" or "branch" line which is authorized to apply for a connection must be a genuine branch or feeder, not a competing company masquerading as a branch in order to gain access to points upon a carrier's main line. United States *v.* Baltimore and Ohio Southwestern Ry., 226 U. S. 14, 1912.

[3] Associated Jobbers of Los Angeles *v.* Atchison, Topeka, and Santa Fé Ry. Co., 18 I. C. C. 310, 1910.

Open v. Closed Terminal

The pressing problem of general policy with reference to the administration of freight terminals for carload traffic is not one of detail. It is whether freight terminals in our large cities shall be operated as a unit or whether, in each city, the individual and competitive advantages of each rail carrier shall be preserved.

The shipper insists upon what he calls an "open terminal." He wishes, that is to say, to ship across country by whatever railroad line he cares to choose, and to secure terminal delivery at a reasonable rate at any point with which his chosen route has a physical connection. The railroad's point of view is different from this; while the carriers which possess poorly located terminals or lack access by their own rails to traffic-producing industries advocate reciprocity, the better-placed systems regard their advantages in terminal location as legitimate weapons to be used in the solicitation of traffic. To put the matter concretely, the railroad which operates an advantageous terminal desires to secure for itself the longest possible line haul of all consignments which originate upon or are destined to locations upon its tracks.

Reciprocal Switching

There are two ways by which a terminal may be "opened." One way is to establish a practice of reciprocal switching. Under this plan, the railroads entering a city retain, each in general, the ownership of their terminal properties, but undertake to accept any cars tendered to them at junction points and place them upon any of their team tracks or industry spurs which may be designated by shipper or consignee. A policy of reciprocal switching is most effective when a city is surrounded by a "belt line" which touches the rails of all incoming carriers, although it is not entirely dependent upon such facilities.

The most developed use of belt line railroads in connection with reciprocal switching in the United States is at Chicago, where the Chicago and Western Indiana, the Belt Railway of Chicago, the Baltimore and Ohio Chicago Terminal, the Chicago Junction, the Indiana Harbor Belt, the Elgin, Joliet, and Eastern, and the Illinois

Northern Railroad operate trackage connecting the Chicago main-line railroads, that make it possible to reach any rail location in the city from any point on any railroad either within or without the city limits.

Certain of these roads also operate "universal freight stations" which extend, to a limited extent, the advantages of the open terminal to less than carload freight.

A "universal" station is one at which freight is accepted for delivery upon the line of any connecting carrier. At Chicago, the Chicago and Western Indiana and the Belt Railway of Chicago operate two universal less-than-carload freight stations at Chicago, one at Cragin and one at Clearing, which handle both inbound and outbound freight for all railroads; the Baltimore and Ohio Chicago Terminal operates the Sears station, which handles outbound less-than-carload freight only, for all roads; the Chicago Junction Railway and its operating company, the Chicago River and Indiana, operate four universal stations which handle outbound less-than-carload freight for all railroads, and one of these also handles inbound less-than-carload freight for eastern railroads; the Manufacturers' Junction Railway operates a universal freight station at Hawthorne, which handles both inbound and outbound freight for all railways; and the Illinois Northern Railway operates what is called the McCormick station, which handles both inbound and outbound freight for all railroads.[1] These facilities are in addition to the tunnel system of the Chicago Warehouse and Tunnel Company and to the lighters of the Merchants' Lighterage Company referred to in earlier pages of this chapter.

Unified Terminals

A second way to open a terminal is to place the operation and, perhaps also, the ownership of terminal properties in the hands of a separate company which may be municipally controlled, as in the case of the belt railroads at San Francisco and New Orleans, or may be controlled jointly by all of the rail carriers which enter the city, as at St. Louis and Kansas City. The best known organization of this sort is probably the Terminal Railroad Association of St. Louis, which serves 28 railroads and about 1,100 industries located upon both sides of the Mississippi River. The St. Louis Terminal Association operates a union passenger station, used by all the railroads, and provides extensive interchange freight yards, less than carload freight houses, and train yards for carload freight, together with still other facilities which supplement the terminal yards and facilities of the individual roads.[1]

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[1] *Railway Review*, September 20, 1924, p. 428.

Operation and Ownership of St. Louis Terminal

At the present time, railroads break up their inbound trains at St. Louis and classify their inbound freight in their own yards for delivery, (a) on their own rails; (b) to other railroads with which they have direct connections; (c) to one or more of the three transfer agencies of the Terminal Railroad Association; *viz.*, Wiggins Ferry Co., St. Louis Merchants' Bridge Terminal Railway Company, and the Tunnel Railroad; and (d) to other transfer agencies, such as the Alton Southern and the Venice and Coundelet Belt of the Southern Railway.

With the exception of some freight interchanged in St. Louis that does not cross the river, and certain live and perishable freight, these three agencies of the Terminal Railroad Association take the cars from their connections west of the river to their principal clearing yards on the East Side, or *vice versa*, where they are again classified for delivery to other roads and to industrial districts on the Terminal lines. Cars are then handled in direct transfer movements between these yards and the interchange tracks of the individual railroads, and from these tracks they are taken by the receiving roads and again classified for movement beyond in road trains and for local delivery.

The Terminal Railroad Association is owned and controlled by the fifteen principal railroads entering St. Louis. These companies agree, under contract, to pay sufficient tolls to cover interest, taxes, rentals, and other charges, each company contributing its proportion, to the extent of one-fifteenth, to make up any deficiency. The Association leases two out of the three bridges across the Mississippi River at St. Louis, and provides facilities used in switching, interchanging, receipt, and delivery of railroad cars within city limits.[2] Its president estimated, in 1927, that about half of the carloads originating at or destined to St. Louis were loaded or unloaded on the tracks of the Terminal Railroad Association and about half on the tracks of individual carriers.

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[1] E. E. R. Tratman, *Engineering News Record*, March 4, 1926, p. 354.

[2] *Poor's Manual*, 1926, Railroad Section. See the Kansas City Terminal Railway Company and the Norfolk Belt Line Railroad for other instances of terminal properties controlled by a number of interested railroads.

Legality of Unified Terminals

There is, of course, some question as to the legality of terminal unification of the St. Louis type, but after consideration, this consolidation has been approved by the courts. The first case was in 1904, when the supreme Court of Missouri ruled that the consolidation of the Terminal Railroad Association of St. Louis with the Merchants' Terminal Company—a merger which consummated the control over St. Louis terminal facilities which the former now enjoys—was not contrary to the constitution or statutes of the state of Missouri.[1]

In 1912, the Supreme Court of the United States held that the unification of the terminal facilities of railroads centering at St. Louis was in violation of the Sherman Anti-Trust Act of 1890, but it took pains to say that this decision was based upon certain peculiarities in the terms upon which the St. Louis terminal properties were held together, not upon the inherent illegality of the whole arrangement, and it prescribed a reorganization only, and not a dissolution, to satisfy the law. According to the Supreme Court, the reorganization should provide:

1. For the admission of any existing or future railroad to joint ownership and control of the combined terminal properties, upon just and reasonable terms;
2. For the use of the terminal facilities by any other railroad not electing to become a joint owner;
3. For the elimination of any provision in the agreement between the Terminal and its proprietary companies which should restrict any of the latter to the use of the facilities of the Terminal Company; and,
4. For the removal of certain specified abuses in administration of the St. Louis Terminal and the judicial settlement of future disputes between the Terminal and proprietary companies and new applicants who desired terminal privileges.[2]

The specifications of the highest court were met by a reorganization agreement dated September 21, 1914, so that the useful life of the Terminal Association was continued.

Disadvantages of Unified Terminals

The arguments against the establishment of unified terminals are the following:

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[1] State *v.* Terminal Association of St. Louis, 81 Southwestern Reports, 395, 1904.

[2] United States *v.* Terminal Railroad Association of St. Louis, 224 U. S. 383, 1912; *Ibid.*, 236 U. S. 194, 1915.

1. A single terminal will not, as is sometimes assumed, enable any shipper to deliver his freight at the nearest freight station, no matter what its final destination may be, as he is able, for instance, to drop a letter into the nearest mail box. The cost of switching and of handling and rehandling freight would be so great under such a system as to compel some classification of receiving stations according to the destination of freight which leaves the terminal.

2. Joint operation may be inefficient operation. It is argued that railroads which now own terminal facilities cannot transfer title to a new company because such properties are usually owned by a variety of long-term mortgages. The most that can be accomplished, according to this point of view, will be a series of long-term leases, and the joint selection by the interested parties of a manager to operate as an agent for all the railroads entering a given city. This, it is said, will make for extravagance, because of the relative indifference of each participating road to economies, the results of which are divided among a number of carriers.

3. Unification of terminals deprives companies which have acquired ample and well-placed terminal properties of the advantage due to their foresight.

4. The merger of terminals will reduce competition because a large portion of this competition takes the form of rivalry between carriers in offering good terminal facilities and in prompt handling of traffic through terminals.

Advantages of Consolidated Terminals

The advocates of unified terminals argue that they are not a device for restraining competition, but a most effective method of promoting competition, as well as for minimizing the expense of handling city freight business. Speaking of the St. Louis situation, the Supreme Court of Missouri observed:

> "We gather from the information that all along the lines of the terminal tracks intersecting the city from north to south, from east to west, and belting it on the west, there are manufacturing and other business concerns with switch tracks or spurs into their premises which enable the shipper to load the cars on the switch tracks on his premises, and have them delivered to any railroad that reaches the city. A more effectual means of keeping competition up to the highest point between parallel or competing lines could not be devised. The destruction of the system would result in compelling the shipper to employ the

> railroad with which he has switch connection, or else cart his product to a distant part of the city at a cost possibly as great as the railroad tariff.
>
> "St. Louis is a city of great magnitude, in the extent of its area, its population, and its manufacturing and other business. A very large number of trunk-line railroads converge in this city. In the brief of one of the well-informed counsel in this case it is said that St. Louis is one of the largest railroad centers in the world. Suppose it were required of every railroad company to effect its entrance to the city as best it could, and establish its own terminal facilities; we would have a large number of passenger stations, freight depots, and switch yards scattered all over the vast area, and innumerable vehicles employed in hauling passengers and freight to and from those stations and depots. Or suppose it became necessary, in the exigency of commerce, that all incoming trains should reach a common focus, but every railroad company provide its own track; then not only would the expense of obtaining the necessary rights of way be so enormous as to amount to the exclusion of all but a few of the strongest roads, but, if it could be accomplished, the city would be cut to pieces with the many lines of railroad intersecting it in every direction, and thus the greatest agency of commerce would become the greatest burden." [1]

The arguments for the unified terminal are clearly expressed in the quotation given above, so far as the economics of terminal location and operation are concerned. It needs only to be added that a unified terminal also prevents the discrimination which exists when the interchange of cars between industries on the same switching road is made at a single service charge, while the charge is higher for industries on separate switching roads for the reason that the cars pass over two or more railroads and the rates reflect what is alleged to be a higher cost.

Authority of the Interstate Commerce Commission to Require the Opening of Terminals

The Interstate Commerce Commission has been asked in a number of cases to compel carriers with advantageously located city trackage to accept carload freight from their connections at or near their terminals. Complainants who desire "open terminals" point to the carriers' statutory duty to furnish transportation upon reasonable request and to afford facilities for the interchange of traffic. They invoke, in particular, the power of the Interstate Commerce Commission to establish through routes and rates and its general authority over terminals as part of the transportation plant subject to the Act to Regulate Commerce. Prior to 1920, however, the Commission's authority was limited in two ways.

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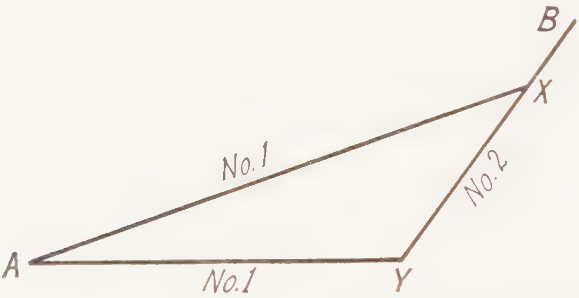
[1] State *v.* Terminal Association, 81 Southwestern 395, 398, 1904.

Authority of Interstate Commerce Commission to Establish Through Routes

In the first place, Section 15 of the Interstate Commerce Act, which authorizes the Commission to require the establishment of through routes, also provides that the Commission shall not require any carrier by railroad, except temporarily in case of emergency, without its consent, to embrace in such route substantially less than the entire length of its railroad which lies between the termini of the proposed through route, unless such inclusion of lines would make the through route unreasonably long as compared with another practicable through route which might be established.

This limitation may be illustrated by a diagram:



Railroad No. 1 extends from A to X and from A to Y. Traffic originating at A on Route No. 1 will normally be delivered to Route No. 2 at X, not at Y, and traffic in the reverse direction originating on Route No. 2 at B, will normally be delivered to Route No. 1 at Y, not at X. In so far, there is no mention of terminals, but a terminal situation is involved if X and B lie in a single switching district and Route No. 1 endeavors to make use of its rival's facilities for delivery at B while retaining for itself the line haul from A to X. Such facts as these were, for instance, present in the leading Waverly Oil case,[1] a hotly contested bit of litigation before the Commission in which complainant, a shipper located upon the Pennsylvania Railroad in Pittsburgh, desired to move his consignments to and from Pittsburgh on other lines, but to make use of Pennsylvania facilities at the terminal itself. For such a purpose, the authority of the Interstate Commerce Commission to establish through routes will not suffice.

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[1] Waverly Oil Works Co. *v.* Pennsylvania R. R. Co., 28 I. C. C. 621, 1913.

Joint Use of Terminals

A second limitation to the power of the Commission over the terminal situation in the United States before 1920 lay in a proviso to the very section of the Interstate Commerce Law which required all carriers subject to its provisions to afford all reasonable, proper, and equal facilities for the interchange of traffic between their respective lines. This explicit mandate, which apparently left wide discretion to the Commission and to the courts in enforcing reasonable practices of interchange at terminals, was itself, prior to 1920, qualified by a proviso to the effect that the law should not be construed as requiring any common carrier to give the use of its tracks or terminal facilities to another carrier engaged in like business.

It is possible that the proviso just quoted should have been interpreted to apply only to the physical use of one carrier's tracks or terminal facilities by the power, equipment, or employees of another carrier. Commissioner Hall argued at one time for such an interpretation,[1] and there was some judicial support for his position,[2] but he was unable to convince his colleagues.

Interpretation of the Law

What the Interstate Commerce Commission did say was that there was nothing sacred about a railroad terminal. The terminal tracks of a railroad might be put to the purpose of legitimate transportation for the benefit of the public just as its main line was so employed.[3] A belt railroad might not close its line on the theory that it is private property,[4] nor might a railroad interchange traffic with one connection and refuse to do so with another when conditions were substantially the same.[5] The Supreme Court has distinguished between the case when a railroad insists upon its statutory immunity and that when it voluntarily throws its terminal open to many branches of traffic. When the railroad follows the latter policy, it must avoid discrimination between its patrons.[1]

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[1] Louisville Board of Trade *v.* Louisville and Nashville R. R. Co., 40 I. C. C. 679 693, 1916.

[2] Grand Trunk Ry. *v.* Michigan Ry. Commission, 231 U. S. 457, 1913; Pennsylvania Co. *v.* United States, 236 U. S. 351, 1915. See, *contra*, Louisville and Nash, ville R. R. Co., *v.* Central Stock Yards Co., 212 U. S. 132, 1909.

[3] Waverly Oil Works, *sup. cit.*

[4] Peoria and Pekin Union Case, 26 I. C. C. 226, 1913.

[5] City of Nashville *v.* Louisville and Nashville R. R. Co., 33 I. C. C. 76, 85, 1915.

Yet these are general phrases, and when the Commission was confronted in 1916 with a refusal of the Louisville and Nashville Railroad to switch traffic originating at or destined to points on the Louisville and Nashville which was offered by connecting lines at Louisville, Kentucky, or was intended for delivery to connecting lines at Louisville, it refused to interfere. "We cannot believe," said the Commission, "that the law was intended to mean that a competing rail line may now be built between important commercial centers, served by a railroad long established and possessing adequate and valuable terminals at both points, and 'by making a physical connection . . . at an arbitrary point near its terminus' be accorded the right of access to those terminals for originating and delivering freight hauled by it and which the carrier owning the terminals is not only prepared but anxious to carry at rates and under rules and regulations that are subject to all of the requirements and restrictions of the act." [2]

Amendment of 1920

It is only since 1920 that the power of the Interstate Commerce Commission over railroad terminals has been enlarged by the elimination of the qualifying proviso to Section 3 and by the addition to the Act of the following explicit grant of authority:

> "If the Commission finds it to be in the public interest and to be practicable, without substantially impairing the ability of a carrier owning or entitled to the enjoyment of terminal facilities to handle its own business, it shall have power to require the use of any such terminal facilities, including main-line track or tracks for a reasonable distance outside of such terminal, of any carrier, by another carrier or other carriers, on such terms and for such compensation as the carriers affected may agree upon, or in the event of a failure to agree, as the Commission may fix as just and reasonable for the use so required, to be ascertained on the principle controlling compensation in condemnation proceedings. Such compensation shall be paid or

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[1] Louisville and Nashville R. R. Co. *v.* United States, 238 U. S. 1, 1915.

[2] Louisville Board of Trade *v.* Louisville and Nashville R. R. Co., 40 I. C. C. 679, 690, 1916.

> adequately secured before the enjoyment of the use may be commenced. If, under this paragraph the use of such terminal facilities of any carrier is required to be given to another carrier or other carriers, and the carrier whose terminal facilities are required to be so used is not satisfied with the terms fixed for such use, or if the amount of compensation so fixed is not duly and promptly paid, the carrier whose terminal facilities have thus been required to be given to another carrier or other carriers shall be entitled to recover, by suit or action against such other carrier or carriers, proper damages for any injuries sustained by it as the result of compliance with such requirement, or just compensation for such use, or both, as the case may be."

Under the Transportation Act of 1920, the Commission may require a common carrier subject to the Act to grant the use of its track or terminal facilities to another carrier subject only to two requirements: (1) that the use is in the public interest; and (2) that it is practicable without substantially impairing the ability of the first carrier to handle its own business. The Commission has considered the exercise of its new powers on several occasions, so far of secondary importance. It holds that it has no authority to require carriers to construct a union station.[1] It has twice refused to compel a railroad to enter into reciprocal switching agreements,[2] and once it has required a carrier to switch a competitor's cars into its terminals against its will.[3] There has been, as yet, no general appeal to the Commission's powers under the amended section, possibly because complainants are restrained by the prospect of compensation ascertained upon the principles which control in condemnation proceedings. Some doubt is also expressed regarding the constitutionality of the law.[4]

Conclusion

There is reason to believe that the terminal problem will assume even greater importance in the future than it has had in the past, with the increasing concentration of population in our great cities, the growth in volume of traffic which must be handled, and the ever keener competition for the occupation and use of city land. It is by no means clear what the final solution will be, nor even what immediate steps should be taken to maintain an equilibrium which threatens to be generally disturbed. The fundamental division at present, in so far as carload traffic is concerned, is between those who advocate the continuance of multiple ownership of terminal facilities with coöperation only with respect to noncompetitive business, and those who demand unified terminals, either controlled by an agent of the main-line carriers, as at St. Louis, or entirely independent, or operated by the state. A compromise suggestion is that freight houses and industry spurs be left to individual control, but that belt lines be constructed at each large city and operated either by the municipality itself or by an independent "system," recognized as such in a consolidation program, and disassociated from any standard railroad control.[1]

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[1] Los Angeles Passenger Terminal Cases, 100 I. C. C. 421, 1925.

[2] Port Arthur Chamber of Commerce and Shipping *v.* Texarkana and Fort Smith Ry. Co., 73 I. C. C. 361, 1922; Manufacturers' Association of York, Pa., *v.* Pennsylvania R. R. Co., 73 I. C. C. 40, 1922.

[3] Hastings Commercial Club *v.* Chicago, Milwaukee, and St. Paul Ry. Co., 69 I. C. C. 489, 1922.

[4] Vanderblue and Burgess, *Railroads; Rates-Service-Management*, 1923.

Perhaps no single plan will prove everywhere the best, but instead a variety of remedies may be applied to a highly complicated and various complaint.

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[1] Ripley, W. Z., "The Problem of Railway Terminal Operation," *Harvard Business Review*, April and July, 1926.

CHAPTER XXIV

CONSOLIDATION POLICIES

Should Common-carrier Organization Be Made Larger?

The question is sometimes asked—how large should a carrier be? For if traffic and operating coöperation between carriers appears desirable, then it may seem well to render coöperation durable and certain by consolidation of different carrier units. The point of view is interesting, although it is hard to know how far to go in any given case and at what point the advantages of harmonious administration are overbalanced, if they are ever offset, by the slowness, selfishness, and indifference of a great monopoly.

The size of railroads is affected by the extent of the nations in which they lie, by the presence or absence of government ownership, by the character and density of traffic handled, and by theoretical views regarding the importance of competition, as well as by the relative operating advantages of small or of large railroad groups.

State Railroad Systems

In most modern countries the state owns a considerable railroad mileage. The largest state systems are those of Russia (37,800 miles), Germany (34,689 miles), India (31,283 miles), Australia (23,147 miles), Canada (22,673 miles), Mexico (12,795 miles), Union of South Africa (9,542 miles), and Italy (8,761 miles).

The fact that these systems exist, and function with a fair degree of efficiency, is evidence that a single railroad administration can control a mileage ranging from ten thousand to thirty thousand miles or more. On the other hand, financial, political, and social motives, as well as economic ones, explain the size of government railroads, so that it is by no means certain that private railroads can afford to follow their policies even with respect to size. Moreover, ownership of a large railroad mileage is consistent with a decentralization for purposes of operation which may approximate in some cases the creation of separate railroads, although naturally with strong central and unifying control.

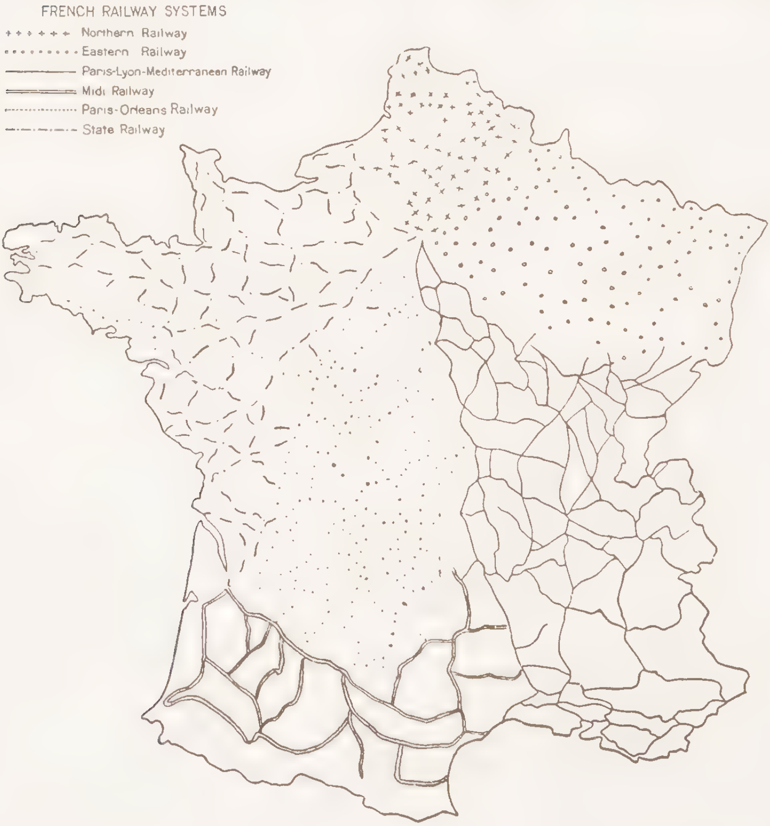
Centralization of Railroad Ownership in France

In at least two countries with private railroads serious attention has been paid to the number of operating companies among which the railroad systems may be divided. One of these countries is England, and the other is France.

The total railroad mileage in France in 1926 was 26,037 miles, distributed between the great railroad systems as follows:

RAILWAY COMPANIES IN FRANCE, 1926

Name of company	Average mileage operated (Miles)	Gross revenue (Francs)
Northern	2,352	2,087,983,409
Eastern	3,083	1,817,757,827
Orléans	4,842	1,745,577,456
Paris-Lyon-Mediterranean	6,077	3,689,985,474
Midi	2,616	849,801,877
State	5,659	1,965,618,822
Alsace-Lorraine	1,408	1,006,054,332
Total	26,037	13,162,779,197



The French railroad systems, proceeding from west to east, and excluding the Alsace-Lorraine Railroad, are the State System, the Northern Railroad, the Eastern Railroad, the Paris-Lyon-Mediterranean, the Orléans, and the Midi. Formerly there was also a Western Railroad, occupying the territory between Paris and Brest, but this company was never prosperous and was acquired by the state in 1919. The Western Railroad is now merged with the State System.

Explanation of the French Policy of Territorial Monopoly

A general plan of railroad location in France was determined by Parliament in 1842. The small number of French companies now in existence, however, and the territorial monopolies which they enjoy, did not originate in 1842, but were rather the result of a series of consolidations accomplished between 1852 and 1858. The government of the day permitted these consolidations because it believed that a few strong railroads could command larger financial resources than a number of small ones, and so would be able to build more of the lines that ought to be laid down and maintain and operate them more effectively than if the tendency toward fusion were resisted. Dangers of monopoly were, indeed, considered, but it was said that a railroad was a monopoly in any case, and that the only question was as to whether it should be a good or bad monopoly. "If a railroad," said a report to the French legislature in 1852, "is badly built, maintained, and operated, being hampered by its own poverty, it will become a vicious monopoly. If it is powerful, on the other hand, it can improve, extend, reduce rates to stimulate business, and satisfy the general interests of the country." [1] These arguments were accepted as convincing, and the six great private railway systems in France (including the Western) were the result.[2]

Since 1859 the national treasury has guaranteed railroad dividends in France, and this financial connection between public and private finance has been sufficient to maintain the French Parliament in its attitude of hostility to competition. Thus the official policy for many years has been to intrust construction in each of the principal French territories to a single company, and to hold that company responsible for results. Occasional departures from this official point of view have occurred, but none that have, in the long run, altered the fundamental character of French railway organization.

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[1] Grippon-Lamotte, "Historique du réseau des chemins de fer français," 1904, p. 120.

[2] The system of Alsace-Lorraine was established, as a separate system, after the World War.

English Legislation of 1921

Great Britain has never guaranteed railway earnings, and the government has never controlled railroad building by any comprehensive plan. Private enterprise has created an excellent railway system under these conditions of freedom, but it has done so under a great variety of ownership and with appreciable waste of effort. In 1921, the English railways were operated by no less than 129 separate companies. Since general conditions made economy in operation at this time imperative, the government decided to try the experiment of reducing the number of operating companies, in the hope that some slack might be taken up and some check imposed upon the tendency to increase railroad rates.

In 1921, the British Parliament, after full discussion, took the important step of combining the railroads of the country into four great groups, instead of the 129 previously existing. The location of these groups is indicated upon the map on page 445.

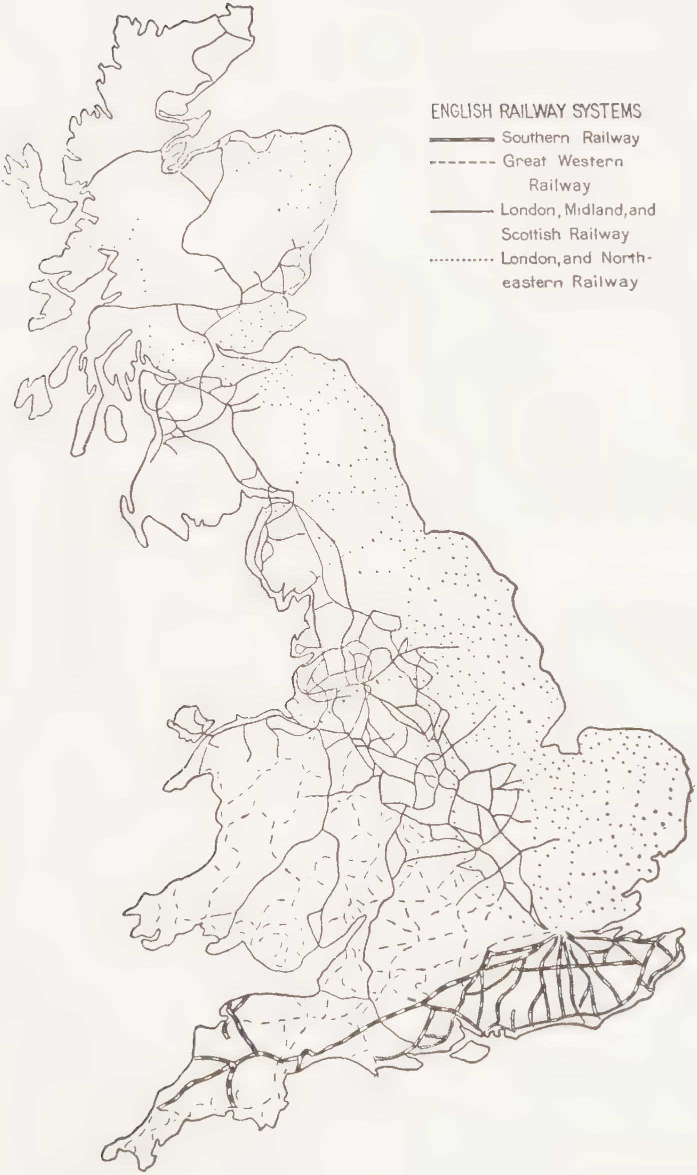
Content of English Railway Systems

The four groups provided in the English Act of 1921 were as follows:

1. The Southern Railway Group, including the London and South Western Railway Company; the London, Brighton, South Coast Railway Company; the South Eastern Railway Company; the London, Chatham, and Dover Railway Company; the South Eastern and Chatham Railway Companies Managing Committee and 14 subsidiary companies.

2. The Great Western Railway Group, including the Great Western Railway Company, the Barry Railway Company, the Cambrian Railway Company, the Cardiff Railway Company, the Rhymney Railway Company, the Taff Vale Railway Company, the Alexander Docks and Railway Company, and 25 subsidiary companies.

3. The London, Midland, and Scottish Railway Group, including the London and North Western Railway Company, the Midland Railway Company, the Lancashire and Yorkshire Railway Company, the North Staffordshire Railway Company, the Furness Railway Company, the Caledonian Railway Company, the Glasgow and



ENGLISH RAILWAY SYSTEMS

Southern Railway
Great Western Railway
London, Midland, and Scottish Railway
London, and North-eastern Railway

South Western Railway Company, the Highland Railway Company, and 27 subsidiary companies.

4. The London and North Eastern Railway Group, including the North Eastern Railway Company, the Great Central Railway Company, the Great Eastern Railway Company, the Great Northern Railway Company, the Hull and Barnsley Railway Company, the North British Railway Company, the Great North of Scotland Railway Company, and 26 subsidiary companies.

Railway Mileage and Revenue in England

The mileage and gross revenue of these four English systems were, in 1925, as follows:

RAILWAY COMPANIES IN ENGLAND, 1925[1]

Name of company	Mileage	Gross revenue
Southern	2,162	$117,624,736
Great Western	3,671	152,503,657
London, Midland, and Scottish	6,770	384,410,251
London and North Eastern	6,327	283,316,140
Total	18,930	$937,854,784

Purpose of Consolidation

Parliament intended, by consolidation, to eliminate duplicate services in Great Britain, to standardize plant and equipment, and to reduce overhead expenses by consolidating the supervisory staff; the English Minister of Transport estimated in 1921 that £25,000,000 could be saved annually after a few years' trial by the combinations contemplated in his bill.

Nor were these operating economies the only advantages which the Ministry hoped to secure. Speaking of future development under his bill, Sir Eric Geddes said:

> "If you are cultivating your garden you do it much better if you know you are going to get the whole profit and advantage of it than if you knew that your next door neighbour would come in the middle of the night and take away a portion of the produce. That is exactly what we have been doing in relation to the railway companies. We have asked them to develop the traffic of the country, and then subsequently have allowed an outside company to come in, or to run a line alongside, or have given them running powers, thus practically taking away, or stealing, the traffic of the original company. I would hope that the House [of Commons] will see that a railway company will develop and

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[1] Figures are drawn from a special number of the *Railway Gazette*, 19 March, 1926.

> endeavor to promote the prosperity of the communities through which it runs if it knows that when it succeeds it will have the advantage of it."[1]

This expression of official English views shows that the British Government had in mind the advantages of territorial monopoly as well as those of large-scale production when it asked the adoption of its reorganization plan.

Objections to Territorial Grouping

In the case of the English legislation, opposition came from two sources. One class of opponents to the grouping plan consisted of representatives of towns which desired to retain some specific element of competition. These included the coal ports of South Wales, such as Cardiff, which feared the results of placing their whole district in the hands of the Great Western Railway.[2] Likewise the port of Hull on the eastern coast of England insisted that the Hull and Barnsley Railway should not be placed in the same group as the Northeastern Railway, although in the same geographical area, because this would place the only two lines serving Hull under control of the same corporation.[3]

Another and still more vigorous protest was voiced by the Scottish companies. The original proposal of the English Government was that the Scottish railroads should be formed into one separate group and the second that they should be formed into two groups, but always separate and distinct from the English lines to the south. The Scottish companies preferred to be combined with the adjacent English railroad systems—railways in east Scotland with railways in northeastern England, and railways in west Scotland with railways in northwestern England. The reason was that the Scottish lines desired the financial assistance which they could derive from association with their wealthier neighbors to the south, and felt that they were entitled to it because their expenses would necessarily be affected by the wage agreements which English lines concluded with national trade unions, while their rates would be limited by the competition of coastwise steamers to a degree which would imperil their financial standing.[4]

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[1] 142 House of Commons Debates, 5th series, col. 353. Speech of Minister of Transport on order for second reading of Railways Bill, 26 May, 1921.

[2] 142 H. C. Deb., 5th series, col. 381–383, Sir D. Maclean.

[3] 145 H. C. Deb., 5th series, cols. 526–530, Major Entwistle

[4] 142 H. C. Deb. 5th series, cols. 417–429, Sir H. Mackinder.

Local Railroad Monopoly Not Complete Under English Act of 1921

In the course of the English debates the original ministerial plan was altered to meet the wishes of the Scottish companies, but the representatives of complaining towns were disregarded. It would be a mistake, nevertheless, to insist too strongly upon the monopolistic character of the present British arrangements. In the first place, British railways are peculiarly exposed to the influence of water competition. Not only this, but the distribution of lines to the four great groups is such that competition of substantially parallel railroads still persists. This is true, for example, of traffic from London to Bristol, London to Liverpool, and London to Glasgow. Finally, the continuance of running rights or trackage agreements under recent English legislation gives the large companies access to cities which they do not reach over their own rails. Because of these facts, the system of territorial monopolies cannot be said to be yet complete in Great Britain, in spite of the progress which was made in 1921.

Classification of Railroad Mileage in the United States

In the United States, as in most countries, the first short local lines early combined into longer routes connecting, in trunk-line

RAILROAD MILEAGE IN THE UNITED STATES, 1924, CLASSIFIED ACCORDING TO MILEAGE OPERATED BY COMPANIES REPORTING TO THE INTERSTATE COMMERCE COMMISSION

			Cumulative percentages	
Class	Number of companies	Mileage	Number of companies	Mileage
Over 10,000	2	21,498.97	.21	8.66
9,000.1 to 10,000	2	18,540.29	.43	16.12
8,000.1 to 9,000	3	25,434.66	.75	26.37
7,000.1 to 8,000	2	14,915.26	.90	32.37
6,000.1 to 7,000	3	20,489.81	1.28	40.63
5,000.1 to 6,000	2	10,336.94	1.49	44.79
4,000.1 to 5,000	4	19,046.66	1.92	52.46
3,000.1 to 4,000	1	3,574.69	2.03	53.90
2,000.1 to 3,000	8	19,052.79	2.88	61.57
1,000.1 to 2,000	21	31,545.27	5.12	74.27
500.1 to 1,000	24	17,416.74	7.69	81.29
150.1 to 500	81	22,348.64	16.33	90.29
30.1 to 150	272	17,042.54	45.36	97.15
30 or less	512	7,074.21	100.00	100.00
	937	248,317.47		

territory, the Atlantic seaboard with Chicago and St. Louis, and in the South, the Eastern coast line with the Mississippi River. A certain minimum size for a standard railroad system may be taken for granted in a country of such an extended geographical area. How far expansion and consolidation actually occurred can, however, be better understood by the examination of recent figures than by a historical account of railroad development.

The distribution of railroad mileage among operating companies in the United States in 1924 was as given on page 448.

Persistence of the Short-line Railroad

There are two facts which stand out rather prominently from the statistics presented in the foregoing table. One such fact is the persistence of the short-line railroad. More than half of all the companies that operate railroads in this country control less than 30 miles of line, and 84 per cent operate not more than 150 miles apiece. Carriers of this type do, of course, a strictly local business. Some of them are private lines, others logging roads, mountain roads, industrial roads, roads serving hotels or other resorts, or enterprises of like sort. The average length of the companies classed as 30 miles or under is 14 miles, and of those classed as 150 miles or less, it is 31 miles. Both during and since the World War the problems of the short-line railroads have received more than usual attention. Carriers of this type are intimately associated with the public which they serve. Their costs are high, their revenues are frequently not large, and yet many of them perform a service which it would be inconvenient to replace.

Large Operating Units

The other fact which the table presents with striking force is the concentration of mileage in the hands of a relatively small group of companies. The short-line railroads control very little track, numerous as they are and important as they may be from some points of view. On the other hand, 19 companies with systems ranging from 3,000 miles to a little under 11,000 miles operate more than half of the mileage of the country. These are the great systems most heard of in the railroad world. Twelve of them are larger than any of the companies in France, and 11 of them exceed in mileage any of the consolidated companies in either France or England. Such systems are the Chicago, Milwaukee, and St. Paul

(10,990.97 miles), the Pennsylvania (10,508.00 miles), the Chicago, Burlington, and Quincy (9,396.55 miles), the Atchison, Topeka, and Santa Fé (9,143.74 miles), the Southern Pacific (8,720.93 miles), the Chicago and Northwestern (8,462.83 miles), the Great Northern (8,250.90 miles), and a number of other companies. The average mileage operated by these 19 companies is 7,044 miles, and few of them depart widely from this norm.

Stock Control of Subsidiary Companies

If we take into account conditions of control, the concentration of railroads in the United States becomes still more striking. In the first place, many of the large American railroads own a controlling interest in subsidiary lines. The New York Central Railroad, to take a well-known example, operates only 6,920.19 miles, but it controls other companies by stock ownership which raise the total of its system to 11,916.98 miles. The corresponding figures for the Atlantic Coast Line are 4,865.99 and 12,426.03; for the Missouri Pacific, 7,336.78 and 11,643.54; and for the Illinois Central, 4,874.87 and 8,409.73. The average mileage controlled by the large systems which we have mentioned is 9,766 miles, or substantially more than the mileage operated.[1]

Major Ownership Groupings

Finally, there are relations between groups of railroads which are less formal and permanent than a connection through majority control, but which influence railroad policies to a marked degree. One system may own a substantial minority of the stock of another system, entitling it to representation on the latter's board of directors. Wealthy men may associate themselves in investments in certain companies; or banking firms that act for several railroads may, through their influence, produce a certain harmony of policy; or independent railroads may even, like independent nations, make alliances when agreement is mutually advantageous. The "Vanderbilt," the "Hill," and the "Morgan" systems are groupings of this sort. The "Harriman" system, during the life of Mr. Harriman, was another, and the "Pennsylvania" system is a fifth. There are groupings of this type which possibly include more than 20,000 miles of line. They have some effect upon general railroad policies, but little upon conditions of railroad operation.

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[1] Inasmuch as the Louisville and Nashville is controlled by the Atlantic Coast Line, and the Chicago, Burlington, and Quincy by the Great Northern and the Northern Pacific, the number of controlling units is reduced, for the purpose of calculating an average, from 19 to 17, and it is the average of these 17 systems (9,766) which is cited in the text.

Comparison of Consolidations in Europe and in the United States

The principal differences between the railroad consolidations in the United States and those in England and in France are, first, that the American groups are larger than the European ones; second, that the American groups are voluntary, not the result of compulsion; third, that they are not nearly so inclusive; and, lastly, that railroad combinations in this country have been competitive rather than monopolistic.

Minimum and Maximum Limits to the Size of Systems

From the point of view of operation, a railroad system should be large enough to permit of proper division of labor, as most railroads over 1,000 miles in length probably are, and it should connect, if possible, economic areas of differing characteristics. It should join, for instance, agricultural and manufacturing, or lumber and fruit, or steel- and cotton-producing districts, and should not allow itself to be confined within an area where economic products and conditions are uniform.

The maximum advisable size of a railroad from this same point of view is less easy to define, but the limiting factor of permissible growth is probably the capacity of the supervising personnel. A railroad system should not be too large for one man to direct. Still more concretely, it should not be so great that the controlling officer is unable to inspect it at reasonable intervals and to establish personal contact with divisional chiefs and officers in charge of construction projects, if not with men still further down in the line of authority. Sir Henry Thornton, president of the Canadian Government Railways, has said that one man cannot effectively manage a railroad which is more than 20,000 miles in length. Capacities and conditions, of course, differ, but this limit is not at present exceeded in the United States, nor, with private railroads, in any other country in the world.

Unevenness of Railroad Units in the United States

It is the unevenness of railroad aggregations, rather than the fact that American railroads are too small for effective operation, that has provoked discussion of railroad consolidation in the United States during the past eight years. Railroads of different lengths, especially when they operate at different costs, find it difficult to work together upon a common basis of rates. Either railroad charges are fixed by the most competent, in which case the poorer lines are likely to be forced out of business, to the detriment of the localities which they serve, or rates are fixed by less competent carriers, and the better located lines enjoy unreasonable profits. When, in 1920, the Congress of the United States proposed to relieve railroad credit by directing the Interstate Commerce Commission to establish rates calculated to produce a fair return upon the value of railroad property in selected districts, it found the unevenness of railroad units the chief obstacle to the success of its plans. Congress, therefore, devised a program of consolidation which we must now consider.

Consolidation Clauses of the Transportation Act of 1920

The clauses of the Transportation Act which relate to consolidation are to be found in Section 5 of the law. The most important paragraphs are the following:

> Paragraph 2: "Whenever the Commission is of opinion, after hearing, upon application of any carrier or carriers engaged in the transportation of passengers or property subject to this Act, that the acquisition, to the extent indicated by the Commission, by one of such carriers of the control of any other such carrier or carriers either under a lease or by the purchase of stock or in any other manner not involving the consolidation of such carriers into a single system for ownership and operation, will be in the public interest, the Commission shall have authority by order to approve and authorize such acquisition, under such rules and regulations and for such consideration and on such terms and conditions as shall be found by the Commission to be just and reasonable in the premises.
>
> Paragraph 4: "The Commission shall as soon as practicable prepare and adopt a plan for the consolidation of the railway properties of the continental United States into a limited number of systems. In the division of such railways into such systems under such plan, competition shall be preserved as fully as possible and wherever practicable the existing routes and channels of trade and commerce shall be maintained. Subject to the foregoing requirements, the several systems shall be so arranged that the cost of transportation as between competitive systems and as related to the values of the properties through which the service is rendered shall be the same, so far as practicable, so that these systems can employ uniform rates in the movement of competitive traffic and under efficient management earn substantially the same rate of return upon the value of their respective railway properties.
>
> Paragraph 8: "The carriers affected by any order made under the foregoing provisions of this section and any corporation organized to

> effect a consolidation approved and authorized in such order shall be, and they are hereby, relieved from the operation of the 'antitrust laws,' as designated in section 1 of the Act entitled 'An Act to supplement existing laws against unlawful restraints and monopolies, and for other purposes,' approved October 15, 1914, and of all other restraints or prohibitions by law, State or Federal, in so far as may be necessary to enable them to do anything authorized or required by any order made under and pursuant to the foregoing provisions of this section."

Other pertinent paragraphs of this section provide for hearings and for the approval by the Interstate Commerce Commission of consolidations which are in harmony with its complete plan and which it believes will promote the public interest.

Theory of Consolidation

In discussing the consolidation clauses which have just been quoted we shall take up, first, theory, then Commission practice, and, finally, results.

The theory of the law of 1920 has already been referred to. Speaking in the Senate during the debate on the railroad bill, Senator Cummins argued in support of its clauses:

> "It seems to me it must be obvious to any thinking man who has studied this subject that there is but one way to meet the problem which is created by the disparity in the earning power of our several railroads. . . .
>
> "We are agreed that we cannot raise the rates upon the weaker properties so that they will be self sustaining, because that would give to the stronger properties, which move 70 per cent of the business of the United States, an income so excessive that it would not be tolerated for a single month. . . . We cannot give to the stronger properties the rates which would return for them no more than a fair interest upon the value of their property . . . because that means death to the weaker properties. . . .
>
> "You may inquire as you will . . . but you will finally reach the conclusion that it can only be done by consolidation."[1]

The officially announced purpose of the American consolidation program was, therefore, in 1920, the equalization of railroad systems in order to make possible effective support to railroad credit through manipulation of rates.

Formulation of a Plan

In order to comply with the direction of Congress to prepare a "plan of consolidation" the Interstate Commerce Commission employed, in 1920, William Z. Ripley of Harvard University as expert. Mr. Ripley, who was a university teacher of transportation and well qualified for the task, formulated a plan in great detail. The Commission modified the plan slightly, published it in 1921,[1] and proceeded to hold hearings upon it. The hearings were completed in December, 1923, by which time they had filled forty-four volumes of testimony and exhibits. The map on page 455 shows the systems proposed by the Interstate Commerce Commission in 1921:

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[1] *Congressional Record*, December 4, 1919, vol. lix, p. 131.

Character of the Ripley Amalgamations

Examination of the map will show the extent and character of the consolidations proposed. The average size of the systems in the plan was 10,509 miles. Generally speaking, systems were not continental in scope, but were restricted within the limits of the great classification territories; the sections which lay, respectively, south of the Ohio and Potomac Rivers and east of the Mississippi, north of the Ohio and Potomac Rivers and east of the Mississippi, and west of the Mississippi River. It was believed that systems ranging far and wide beyond these natural territorial divisions would lack stability and might easily exceed the capacity of any management to control.

Generally speaking, also, the proposed systems were made competitive with each other. Sometimes the competition was direct, as in the case of the Southern Pacific and the Santa Fé, sometimes it was less direct, as in the case of the Southern Railway and the Illinois Central; but the attempt was made in either case to comply in this respect also with the mandate of the law.

The statute required that in addition to preserving competition, consolidation plans should be so devised as to leave existing routes and channels of commerce undisturbed, while keeping the financial aspects of the new mergers in view. The systems were therefore arranged so as to be as nearly equal in financial strength as conditions would permit, while elaborate pains were taken to facilitate and not to hinder the flow of commerce. Professor Ripley expressed the view, indeed, that the broadest consideration of the commercial needs of the country was appropriate at this point.

> "It is held [he said] that the maintenance of the 'existing routes and channels of trade and commerce' implies not the preservation of merely artificial currents and conditions, but

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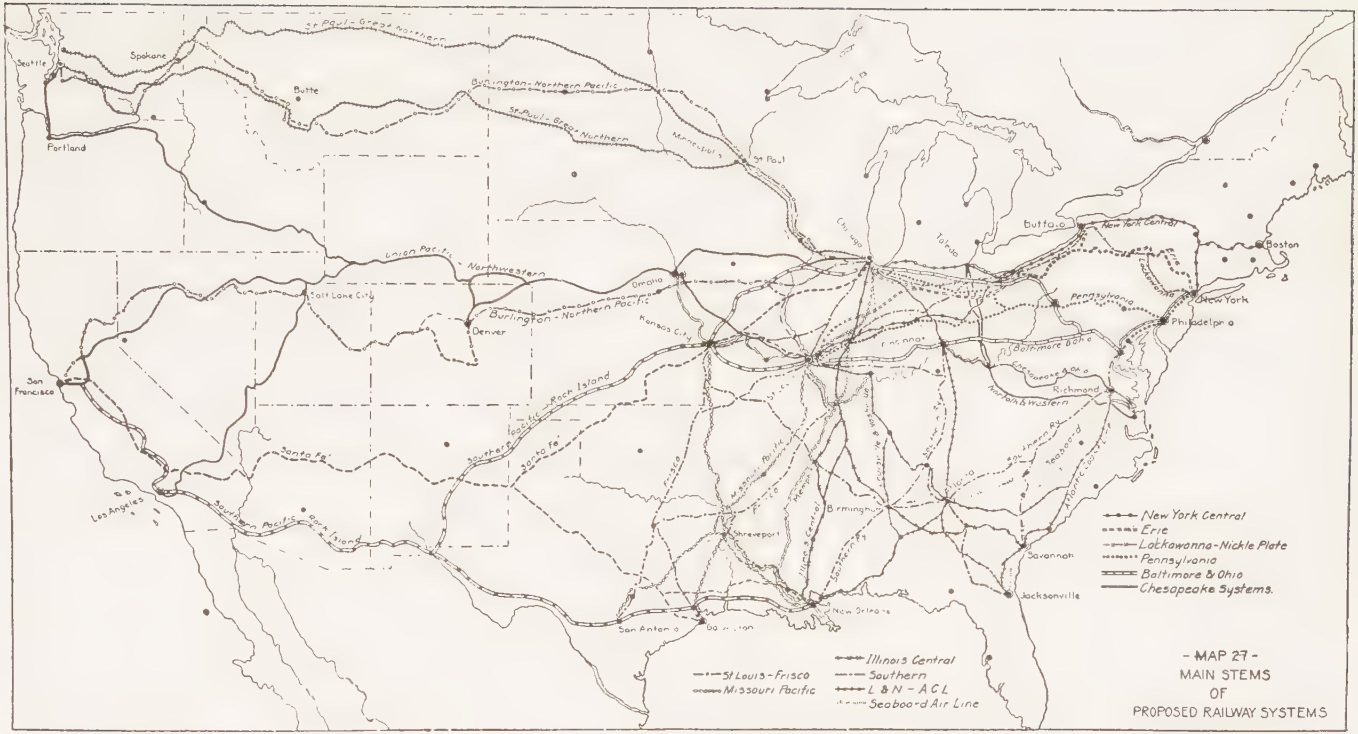
[1] In the Matter of Consolidation of Railroads, 63 I. C. C. 455, 1921.



- MAP 27 -
MAIN STEMS
OF
PROPOSED RAILWAY SYSTEMS

WASHINGTON, GOVERNMENT PRINTING OFFICE, 1921

63763—21. (To face page 600.) No. 27.

RIPLEY CONSOLIDATION PLANS

> that the statute contains an invitation to consider these carrier corporations in their basic relationship to the welfare, present and prospective, of the country. Viewed in this larger sense, the Act is at once an invitation and an opportunity. It calls for an analysis of the commercial geography of the United States, in relation to the layout of its railway net. For, unless the location of its railways conforms to the commercial requirements of the country, there can be no permanent prosperity for either. The further requirement in the act for a certificate of public exigency for proposed new construction of railways is but another expression of this intent in the law."[1]

Finally, the report recognized the importance of a considered adjustment of the terminal problems discussed in the previous chapter to the successful working out of a consolidation plan, and declared that free access to terminal properties must be somehow provided, either by the creation of independent terminal companies or in some other way.

The Ripley suggestions for consolidation were framed with great care, and the report that accompanied them presented an extremely comprehensive and intelligent analysis of the movement of traffic over the railroads of the United States and of the business relations of the different parts of the system with each other. The proposals of the report were not adopted, and probably no definite amalgamation plan could have secured general approval at the time, but they considered the railroad problem from a new angle and received wide and respectful attention from the press.[2]

Control by Lease or by Stock Purchase

Failing the acceptance of a consolidation plan, the Interstate Commerce Commission found itself unable legally to approve any consolidation at all, for the grant of power that it enjoyed under the Transportation Act of 1920 extended only to the ratification of consolidations that were in harmony with the "complete plan" of consolidation which it was directed to adopt. Under these conditions, the Commission fell back upon paragraph 2 of section 5, and a great many decisions have been handed down and some results of consequence secured under this section.

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[1] In the Matter of Consolidation of Railroads, *sup. cit.*

[2] The Ripley plan is not the only general consolidation scheme that has been organized since 1920, although it is the only one which has any official status. Among other suggestions may be mentioned that of John E. Oldham, a New England banker, who devised a national plan for redistribution of systems, and the proposals made by the carriers themselves in Eastern territory and in the Far West relating to consolidation in certain sections.

According to Paragraph 2 of Section 5, the Commission may authorize the unification of carriers by lease or purchase of stock, or in any other manner not involving consolidation. The two categories mentioned cover the usual methods of combination, so that the Commission is able to proceed with freedom so long as no carrier proposes a direct transfer of title to property and a complete surrender of identity.[1] There is little difference between this procedure and actual consolidation, especially when the lease is for several hundred years and the stock purchase covers virtually all outstanding shares.

Operations conducted under paragraph 2 of section 5 need not conform to an approved federal plan;[2] they are not hampered by anti-trust or other restraining regulations, whether federal or state (see par. 8, section 5).[3] Conditional as well as absolute approval may be given, as where the Commission approves a lease contingent upon retention of stock control over the lessor by the lessee. The Commission cannot, however, require a carrier to make application under the provisions of Paragraph 2 of Section 5 for the acquisition of control by it of another common carrier.[4]

Simplification of System Organization Through Consolidation

The voluntary amalgamations which the Interstate Commerce Commission has approved since 1920 are of the following types:

A number of large carriers have seized the opportunity presented by the law to unify and simplify the organization by which their systems are held together. Among the companies which are prominently represented in this class of applications are the Pennsylvania Railroad, the New York Central Railroad, the Atchison, Topeka, and Santa Fé Railway, the Missouri-Kansas-Texas Railroad, the Chesapeake and Ohio Railway, the Boston and Maine, and the Terminal Railroad Association of St. Louis.[1]

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[1] Control of Central Pacific by Southern Pacific, 76 I. C. C. 508, 524, 1923.

[2] The Interstate Commerce Commission has pointed out that paragraph 2, section 5, does not overrule state laws except as it vests in the Commission power to determine whether or not a purchase of stock or a lease is in the public interest. The Commission does not believe that Congress intended to prevent voluntary consolidations under available state laws in order to force consolidation under a general plan. The words "public interest," therefore, in paragraph 2, section 5, do not imply conformity with a comprehensive program of amalgamation. Operation of lines, etc., by the New York, Chicago, and St. Louis R. R. Co., 79 I. C. C. 581, 585, 1923.

[3] The Commission has, for instance, authorized the joint lease of a South Carolina railroad by a Virginia and a Kentucky corporation, in direct violation of a provision of the constitution of South Carolina to the effect that no foreign corporation shall lease or operate any railway in that state (90 I. C. C. 113, 1924). It has, again, approved the acquisition by the Illinois Central of parallel lines in Illinois, in spite of an Act of the Illinois legislature forbidding railroads to purchase other railroads which are parallel or competing (82 I. C. C. 100, 105, 1923; 86 I. C. C. 371, 1924).

[4] 86 I. C. C. 740, 748, 1924.

In the majority of cases of this type the applicant has desired to lease the mileage of subsidiary companies of which it already owns all or most of the capital stock. In some, the operation has involved the transfer of stock ownership from one company in a system to another, as where the Pennsylvania Railroad acquired the stock of the Pittsburgh, Fort Wayne, and Chicago Railroad from the Pennsylvania Company, a subsidiary organization. None of these applications have occasioned any change in control, but they have tended to cut down overhead expense and occasionally to produce operating economies.

Minor Extensions

A second type of consolidation may be classified as a minor extension. In many instances of this sort a large company acquires part or the whole of a small independently financed railroad which has passed through a period of unprofitable operation or which the owners desire to sell in order to release their capital for other purposes. Sometimes the road to be acquired consists of a coal spur which the main line railroad originally refused to build, sometimes it is a logging road which has engaged in common carriage with inadequate resources, sometimes it is a railroad in mountainous or sparsely settled territory, which cannot pay by itself but possibly can earn a profit under the management of a larger line. Consolidation usually means economy in such cases, and no far-reaching questions of policy are involved.

There is one sort of minor extension which differs from that discussed in that it consists of new construction, in behalf of a major company, through some subsidiary organization. The Santa Fé Railway has organized extension work in this manner several times during the past few years. The Illinois Central has also built through subsidiary companies in order to avoid limitations of local law,[2] and there are other examples which might be given. This practice is by no means a new one, but it now requires approval under Paragraph 2, Section 5 of the Act to Regulate Commerce, because the parent company usually wishes to lease the property of its subsidiary and to own its stock. There is no operating saving involved, the controlling consideration being financial.

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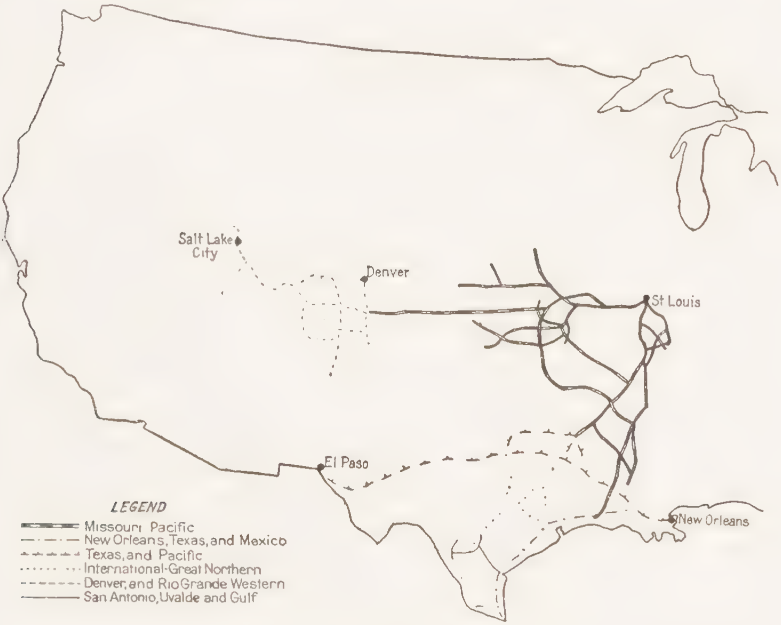
[1] The Boston and Maine application was denied on the ground that it proposed a complete merger and not merely a lease or stock ownership arrangement, and so could not be considered until the Interstate Commerce Commission had adopted a general consolidation plan (Merger of Subsidiary Companies with Boston and Maine, 76 I. C. C. 797, 1923).

[2] Construction of cut-off for Illinois Central R. R., 82 I. C. C. 100, 1923.

Major Enlargements of Railroad Systems Under Paragraph 2, Section 5

The major operations which have been conducted under the consolidation clauses of the Interstate Commerce Law during the past six years are as follows:


Salt Lake City
Denver
St Louis
El Paso
New Orleans
LEGEND
Missouri Pacific
New Orleans, Texas, and Mexico
Texas, and Pacific
International-Great Northern
Denver, and Rio Grande Western
San Antonio, Uvalde and Gulf

Missouri Pacific Consolidation

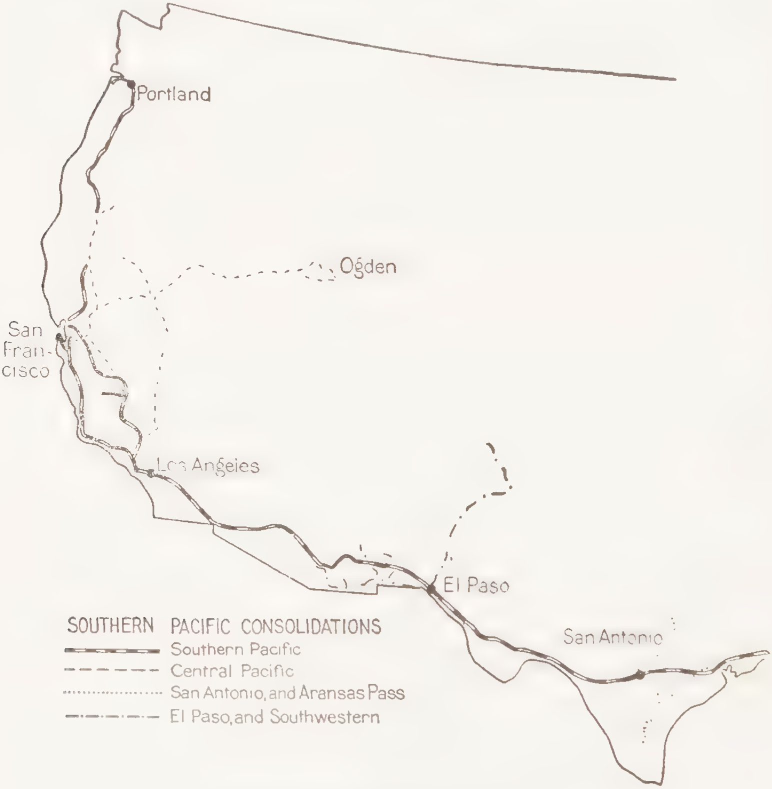
1. Missouri Pacific Railroad acquires stock control of the Texas and Pacific Railway (1,952.74 miles), 1924.

2. Missouri Pacific Railroad acquires stock control of the New Orleans, Texas, and Mexico Railway (1,132.79 miles), 1924.

3. New Orleans, Texas, and Mexico Railway acquires stock control of the International-Great Northern Railroad (1,159.5 miles), 1924.

4. New Orleans, Texas, and Mexico Railway acquires stock control of the San Antonio, Uvalde, and Gulf Railway (336.32 miles), 1925.

5. Missouri Pacific Railroad acquires 50 per cent of the stock of the Denver and Rio Grande Western Railroad (2,609.67 miles) from the Western Pacific Railroad, 1924.



Southern Pacific Consolidation

6. New York, Chicago and St. Louis Railroad acquires the capital stock of the Lake Erie and Western Railroad Company (727.81 miles) and of the Toledo, St. Louis, and Western Railroad Company (454.17 miles), 1923.

7. El Paso and Southwestern Company acquires stock control of the Arizona and New Mexico Railway (108 miles), 1921.

8. Southern Pacific Company acquires stock control of and leases the El Paso and Southwestern System (1,139.87 miles), 1924.

9. Southern Pacific Company acquires stock control of the San Antonio and Arkansas Pass Railway (729.84 miles), 1925.

10. Southern Pacific Company is allowed to retain control of the Central Pacific Railway Company (2,324.62 miles), 1923. This control was successfully challenged by the federal Department of Justice in 1922, under the Anti-trust Law of 1890, but the saving clause of Section 5 of the Interstate Commerce Act empowered the Interstate Commerce Commission to exercise discretion and to hold the companies together, which it did.

11. Atlantic Coast Line Railroad and Louisville and Nashville Railroad lease the Carolina, Clinchfield, and Ohio Railway (276.85 miles), 1924.

12. Chicago, Milwaukee, and St. Paul Railway acquires stock control of and leases the Chicago, Terre Haute, and Southeastern Railway Company (298.09 miles), 1921.

13. Illinois Central Railroad, through the Yazoo and Mississippi Valley Railroad, leases the Alabama and Vicksburg Railway (141.49 miles) and the Vicksburg, Shreveport, and Pacific Railway (188.46 miles), 1926.

14. Illinois Central Railroad acquires, through the Mississippi Valley Company, stock control of the Gulf and Ship Island Railroad (307.56 miles), 1925.

Consideration of this list will show that the major system extensions which have occurred under Paragraph 2 of Section 5 of the Transportation Act of 1920 consist of a somewhat notable reconstruction of the Missouri Pacific, certain extensions of the Southern Pacific in the Southwest, the beginning of a Nickel Plate merger, and less important additions to the mileage controlled by the Atlantic Coast Line, Louisville and Nashville, Chicago, Milwaukee, and St. Paul, and Illinois Central Railroad Companies. In addition to these extensions, the settlement of the Central Pacific-Southern Pacific merger controversy is certainly an accomplishment to the credit of the Act.[1]

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[1] The list printed in the text does not, of course, include consolidations which have been discussed or proposed but not accomplished. There are a number of important projects of this character, of which perhaps the most interesting is the suggested combination of the Chesapeake and Ohio Railway Company, the Hocking Valley Railway Company, Erie Railroad Company, Père Marquette Railway Company, and the New York, Chicago, and St. Louis Railroad Company, into a new system with an aggregate mileage of 9,160 miles of road in the United States and 337 miles in the Dominion of Canada. This consolidation was proposed to the Commission by O. P. and M. J. Van Sweringen, of Cleveland, Ohio, in 1926, but was disapproved because the terms of the intended acquisitions of control were not thought to be in the public interest. Mention should also be made of the proposed consolidation of the Great

Theoretical Defects of the Consolidation Clauses of the Transportation Act of 1920

This is not a very large achievement, and, in fact, a survey of the results of eight years of experience under the consolidation clauses of the Transportation Act of 1920 reveals little progress toward consolidation upon a large scale, and, of course, none in the direction of a territorial grouping such as that which characterizes the railroad systems of England and France, although there has been a considerable amount of detailed readjustment of corporate relations among railroads in the United States.

The essential theoretical defect of Section 5 of the Transportation Act is that its avowed purpose—equalization—is not to be attained by its method—consolidation. Doubtless it is possible to regroup the railroads of the country so that each and every company shall operate approximately the same mileage, or earn approximately the same receipts. But this reorganization does not equalize, it must be remembered, between the human owners of the companies chosen for illustration, although it does equalize between the companies themselves. It remedies, therefore, no injustice, in any sense that deserves attention in a discussion of public policy. Whether the amount that any individual receives is altered by combination of corporations depends, not upon the fact of consolidation, but upon the terms upon which consolidation takes place. If the union is effected by means of a newly organized company, which exchanges its shares for the shares of the older merging companies in proportion to the earnings contributed by each separate company to the joint undertaking, and that is the normal basis for a voluntary merger, then there is no change at all. If railroad A contributes 80 per cent of the earnings of the new enterprise, then its shareholders under this theory will receive 80 per cent of the earnings of the two combining companies, which is precisely what they had before.

The general principle may be laid down that when consolidation under the Act of 1920 is based on earning power, then the earnings of any group of companies that have been merged in a single concern will be distributed, so far as individual receipts are concerned, in the same unequalized fashion after consolidation as they would have been distributed before consolidation occurred. The funda-

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Northern, Northern Pacific, and Burlington systems. This is an undertaking of very great importance, but one which the Commission has not yet considered (105 I. C. C. 425, 1926).

mental evil which the Act has sought to remedy has not been cured; the only significant change which has occurred is produced by the elimination of recapture, which brings it about that the government takes less and the carriers retain more of the aggregate revenue of the consolidating companies than was the fact before consolidation took place.

Arguments Against Consolidation

In addition to the objection which may be raised to consolidation as an equalizing device, opponents of the present congressional consolidation program declare bluntly that prosperous railroads have no more reason to take over embarrassed railroads than prosperous bankers or farmers or manufacturers have to contribute to the support of lines which do not pay. It is denied that consolidation will produce economies, or, at least, if economies are admitted it is contended that they will be offset by the decreased efficiency inherent in the operation of large properties, widely scattered, by a small number of centralized organizations.[1]

The policy of establishing large systems is further criticized upon the ground that it will retard the abandonment of ill-judged enterprises, that it will make for rigidity, prematurely forcing traffic into channels which may not suit the industrial development of future years, that it will lessen competition, that it will require expensive financial and corporate reorganization, and that it will be highly difficult of accomplishment in a country where dissatisfied minorities can resort to judicial process to enforce their real or supposed constitutional rights.

Arguments in Favor of Consolidation

On the other hand, there are intelligent students of American transportation problems who earnestly advocate resolute enforcement of a consolidation program. Some of these proponents still dwell upon the administrative conveniences of regulating a few standardized, rather than many unstandardized, railroad corporations. But there are other arguments as well which must be given weight, and of these the most significant are perhaps the three which follow.

One of these contentions relates to the operating economies to be expected from consolidaiton. Former Director-General Walker D.

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[1] Morse, "Consolidation of Railroads," Transactions of the American Society of Civil Engineers, vol. lxxxvii, p. 716, 1924.

Hines has expressed the view that the elimination of executive offices and staffs through system mergers will not occasion important savings. But he then continues:

> "The real economies which will come from consolidation will be far more important in scope and significance. The elimination of switching, the standardization of materials, the concentration of purchases, the sending of traffic by shorter routes, the elimination of interline accounting, the greater ability to utilize shops and equipment on all parts of the system to the maximum extent, all constitute real and important elements of economy. Perhaps one of the most important matters from the standpoint of economy and improved service will be the fact that freight cars of the system will be 'at home' on all parts of it so they can be put at the public service without limitation, and so when in need of repair they can be fully repaired where they are, instead of being sent back to the home line, with possible necessity for various minor repairs away from home to be later discarded or duplicated on home line." [1]

This specific enumeration is consistent with the contention of the parties in cases brought before the Interstate Commerce Commission since 1920, and it deserves restatement, although it is not, of course, conclusive even on this aspect of the case.

A second argument is derived from the thorough study of intercorporate railroad relationships which has characterized the past few years. It may be summed up by saying that the strength or weakness of a railroad system depends upon its ability to secure a fair division of the revenue on traffic which it handles as well as upon the importance of the service that it renders to the public and the general level of rates. Some strategically located systems use their exclusive control over certain terminal facilities or their ability to divert traffic from one to another of their connections to extort a species of monopoly profit, which enriches them while keeping other railroads poor. This practice has a twofold result upon the public. It tends, that is to say, to hamper railroad development in the territory of the less favorably situated carriers, and it causes deflections of traffic and consequent wastes of transportation that are disadvantageous to shippers and consumers as a whole. The underlying purpose of the Ripley plan was to minimize these practices by giving to each of the great systems of the country easy access both to

[1] *Harvard Business Review*, July, 1923.

sources of traffic and to destination points in large selected territories, a result which would be of undoubted advantage to railroad transportation as a whole.

Finally, a third argument for consolidation is that it will facilitate the revision of railroad rates. Secretary Hoover has recently observed that our railroad rate structure is a most amazing complex of local and commodity compromises. "It would be theoretically possible," he says, "to reorganize the rate structure from a national point of view in such fashion that, without disturbing even the present earning levels for the country as a whole, some relief could be given to the more primary products, such as agriculture and coal, by imposing a more equitable burden upon the highly finished goods. But it is impossible to secure the best results from rate reorganization without consolidation and the consequent securing of a much wider diversification of traffic, for many of our railways are in a major way dependent on one class of traffic, such as either coal or grain, and with the present wage levels, present taxes, and present commodity prices, it is impossible to expect great rate relief without consolidation itself." [1]

Cummins Amendments

In 1924 Congress gave some consideration to a bill introduced by Senator Cummins designed to hasten consolidation. This bill authorized the Commission, after the adoption of a plan of consolidation but not before the expiration of a period of two years after the passage of the pending act, to create a so-called "consolidation committee" within each of the great systems. The committees were to consider and report to the Commission regarding the financial adjustments and exchanges of securities necessary to accomplish consolidation. When seven years had elapsed from the date of passage of the new law, two additional provisions were to come into play. One of these allowed the carrier or carriers owning the major part of the main track mileage within any federal system to propose a reorganization plan which should provide for the acquisition by condemnation proceedings of the remainder of the railway properties within the system. The other authorized the Interstate Commerce Commission to fix the divisions of rates between carriers in each system so that the surplus of each carrier, in any year, should be substantially the same proportion of its value as the surplus of every other carrier within the system. The object of both of these provisions was to bring a certain pressure to bear upon recalcitrant systems, without resorting to direct compulsion in order to secure consolidation. In 1925 the Cummins bill was reintroduced with some changes, but the absence of any strong public sentiment in favor of compulsory consolidation, and, later, the death of the author and principal supporter of the bill, prevented action.

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[1] United States Senate, Hearings before the Committee on Interstate Commerce on S. 2224, a bill to provide for the consolidation of railway properties, May 21, 1924.

Amendments Proposed by the Interstate Commerce Commission

Still more recently, the Interstate Commerce Commission has submitted an excellent report to Congress upon the subject of consolidation, including proposals which have been embodied in the "Parker" and "Fess" bills introduced, respectively, in the House and Senate. The most important changes asked for by the Commission are the following:

1. Repeal of the section requiring the Commission to adopt a complete plan of consolidation;
2. Elimination of the distinction between acquisitions of control which involve (Paragraph 6, Section 5) and those which do not involve (Paragraph 2, Section 5) the consolidation of the carriers in question into a single system for ownership and operation;
3. Specific grant of authority to attach conditions to an approval of consolidation, including the power to disapprove a consolidation upon the ground that it does not include a carrier, or all or any part of its property, which ought to be included in the public interest and which it is possible to include upon reasonable terms.

The Fess bill, which enacts these suggestions, provides that two or more carriers may petition the Commission for approval of a consolidation, which may be either an acquisition of securities, a corporate merger, or a transfer of properties and franchises or rights to operate by purchase, lease, exchange, or otherwise. The Commission may approve or deny or approve upon conditions, and its approval shall relieve the carrier from the operation of prohibitory legislation, state or federal.

The carriers and the Commission are directed to give due consideration to the inclusion in their plans of short and weak carriers in the territory involved. The Commission may impose as a condition to the approval of a proposed unification that a carrier not joining in filing the petition be made a party to the unification; if, however, after hearing, the Commission is of the opinion that the carrier that is to be made a party is insisting upon unreasonable terms, the Commission may revoke or modify the condition or prescribe the terms on which the carrier may be made a party to the unification.

The Fess bill provides for the condemnation of minority holdings of voting securities the owners of which dissent from an approved plan. It lists certain of the rights and powers which a new consolidation corporation is to possess. It declares that there shall be no federal or state or local tax upon the issue or sale of securities or the transfer of interest to property or upon any other means or proceeding necessary to carry a proposed consolidation, and it repeals Paragraphs 4, 5, and 6 of Section 5 of the Interstate Commerce Act, which now require the Commission to prepare and adopt a plan for the consolidation of the railway properties of the United States. In a word, it simplifies consolidation practice, but leaves unification to the voluntary action of the carriers concerned without the pressure contemplated by the earlier Cummins bill. There is no great likelihood that the Fess bill will pass; it represents, however, the trend of public opinion at the present time, and so commands considerable support.

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CHAPTER XXV

EARLY STATE LEGISLATION—GRANGER LAWS

Statutory Regulation of Transportation Agencies

In the remaining chapters of this book we shall present a more formal account of the regulation of transportation agencies by governments than has been set forth anywhere in the preceding pages. Such regulation is extensive and important in the case of railroads, less so with respect to inland waterways, and only in process of development so far as motor road vehicles and air transport are concerned. In the case of street railroads, regulation is highly developed, but largely local in character, and concerned with special problems such as valuation and finance. This variation in significance and in perfection of administration will explain the emphasis which will be laid upon the purposes and machinery of railroad control, but reference will be made, where desirable, to the regulation of other utilities as well.

Railroad Regulation by Charter Provision

In the United States, as in England, the first action of the legislature with respect to railroads was to issue charters. A charter is a grant of power by the sovereign which enables a corporation to exist for certain described purposes, and to do certain things. Meyer enumerates the leading features of railway charters in the United States as follows:

> "The leading features which are common to railway charters of the several states may be associated with the following points, every charter having one or more provisions relating to some or all of these points: name of company; number of commissioners; number of board of directors; the amount of capital stock; size and number of shares; the amount of the payment per share at the time of subscription, and the maximum assessment per share, together with the number of days' notice required; systems of voting; the time limit as to beginning and completing construction, junctions, branches, and extensions; route; expropriation and methods of valuation, together with the manner in which disputes are settled; the amount of land which may be held; the number of miles to be constructed before traffic may be opened; the power to borrow money and the rate of interest;

> the distribution of dividends, liability of stockholders, annual reports, passenger and freight rates. In every state charters may be found which contain provisions on only a few of these points, while in most states charters were granted containing provisions on all of them, and perhaps others not here indicated. . . ." [1]

Now evidently the fact that a railroad cannot function without a grant of power from the state affords the latter a convenient opportunity to insist that the railroad accept certain principles of conduct as a condition of operating at all. Some early charters, for instance, contained clauses requiring publicity of rates, fixing maximum scales of charges, calling for annual reports, forbidding discrimination, and other general matters of this sort, besides the phrases conveying powers immediately necessary to the corporate organization.

Defects of Charter Regulation

Unfortunately, the practice of regulating railroad companies through charter provisions presents difficulties. In the first place, a railroad charter affects one corporation only. Secondly, charters not infrequently conflict, one with another, and where they do not, differences in their terms nevertheless cause controversy. This was true even in England before 1842, in spite of the fact that English railroad charters were all issued by Parliament and might therefore be expected to have been consistent with one another. In France, where there are only five important private railways and one charter-issuing authority, the government has been able to standardize charters and to use them effectively, but in the United States, where there are many railway companies and where each state government has authority to issue charters, the chance for variety in provisions is infinitely greater, and the attempt to regulate through charter provision has led to futility and to confusion. Lastly, charters are difficult to amend, at least unless the right to amend is reserved when the charters are first granted, because a charter is a contract and cannot, therefore, be changed without the consent of both parties concerned. These facts have led American governments to give up the attempt to regulate through charter provision, and to act through other forms of law.

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[1] Meyer, *Railway Legislation in the United States*, pp. 53-54.

Early General Laws and Constitutions

In addition to regulation through charters, the state may act through general law. It may prescribe rules of conduct, that is to say, for all railroads subject to its jurisdiction. Sometimes this is done through constitutional provision, and sometimes through simple statute. Probably the difference is less than is supposed. Originally constitutions in this country were conceived of as relatively brief documents, setting up a framework of government, and perhaps indicating in a broad way the purposes for which that government was organized. In such a constitution there is little place for railroad regulatory provisions, outside, perhaps, of clauses relating to a railroad commission or other body. Yet one can hardly say that the conception of a constitution as a framework of government has ever been accepted in all parts of the United States, and certainly in the West to-day constitutional amendments resemble ordinary statutes in the detailed character of their provisions, differing from them mainly in the circumstance that they can be altered or repealed only by popular vote.

It is now over ninety years since American states began to regulate railroad carriers by constitutional or statute law. The first general law was passed as early as 1833. In this and in subsequent statutes the states dealt with applications for railroad charters, the safety of travel, the taxation of railroad companies, subscriptions to and transfer of stock, annual reports, and a variety of other items. It will be perceived that the subject-matter of the laws resembled that of the charters. In but few cases was an attempt made at the beginning to set maximum rates for the carriage of passengers or freight, and although some of the laws set up commissions, these bodies were concerned rather with matters of safety than with rates. Early general legislation in this country marked an advance in the direction of standardized treatment of railroad companies, but it accomplished little in the way of effective railroad control.[1]

Granger Movement

The most important of the early efforts to establish a system of railroad regulation was made in the early 'seventies, and was one result of what has come to be known as the Granger movement. The characteristics and effects of this movement, in so far as they relate to railways, will be discussed at some length in this chapter.

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[1] Meyer, *sup. cit.*

The Granger agitation proposed to organize the farmers of the South and of the Middle West for the improvement of their economic condition. The granges were farmers' organizations, nonpolitical, and intended to encourage diversification of crops, systematization of farm work, coöperation in buying and selling, and other sound agricultural policies. The idea seems to have been conceived by a government clerk named Kelley. Kelley's duties led him through the Southern states in the year 1866, where he was impressed by the unprogressive spirit which the farmers displayed. In 1867, aided by five other government clerks and a fruit-grower of Wayne, New York, he worked out a ritual, framed a constitution, adopted a motto and a schedule of fees, and launched an organization bearing the name of the "Patrons of Husbandry," which was destined to enjoy an extraordinarily influential career.

An energetic man can always make converts in the United States if equipped, as Kelley was, with a constitution, a motto, a ritual, and a set of fees. Such symbols make an irresistible appeal to American citizens. It so happened, however, that the Grange organization benefited in its early years by a very great agricultural depression. Between 1866 and 1876 the price of wheat dropped from $1.52 per bushel to $.96 per bushel, the price of corn from $.47 to $.34, and the price of cotton from $97.54 to $47.31 per bale. This decline, which was the result of over-production, aggravated by poor marketing methods and a disturbed state of the currency, predisposed the farmers to joint action of some kind, and partly accounts for the rapid growth of the Grange during the ten years that have been mentioned. The most rapid development of all came after the panic of 1873. On May 19, 1873, granges in the United States numbered 3,360; on March 1, 1874, 14,365; and on January 1, 1875, there were 21,697 of these farmers' organizations. This was the high point of the movement. In July, 1876, the number of granges had declined to 15,127, although the membership in the order still amounted to 588,525.[1]

The importance of the Granger movement in connection with railroad legislation was that it enabled the farm voter in the Middle West to formulate and to give expression to his views on railroads, as on other matters, just at the moment when his views with respect to transportation were more than usually pronounced. For the Western farmer attributed his failure to market his crops at a profit largely to exorbitant railroad rates. Moreover, the farmer was beginning to resent the known fact that some shippers were receiving lower rates than others, and to regret the investment which he had made in railroad securities.

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[1] Buck, *The Granger Movement*, p. 58.

Illinois Railroad Legislation, 1869-71

Out of this seething discontent west of the Allegheny Mountains came several interesting experiments in legislation. The states principally affected were Illinois, Minnesota, Iowa, and Wisconsin.

In Illinois, a law was passed in 1869 declaring in general terms that railroads should be limited to just, reasonable, and uniform rates.[1] This was followed in 1870 by an amendment to the constitution of Illinois declaring railroads to be public highways, forbidding stock-watering and consolidations of competing lines, requiring railroads to make annual reports to a state officer, and directing the legislature to pass laws to correct abuses and to prevent unjust discrimination and extortion by railroad carriers in the state.[2]

Acting under the mandate of the constitution, the Illinois legislature promptly passed a series of laws. One of these, relating to passenger fares, divided the railroads of the state into classes based upon their gross earnings per mile, and fixed a sliding scale of maxima for the different classes, ranging from 2½ cents to 5½ cents per mile. Another Act, applying to freight rates, forbade discrimination, and, more particularly, provided that:

> "No railroad corporation . . . shall charge or collect for the transportation of goods, merchandise or property on its said road, for any distance, the same nor any larger or greater amount as toll or compensation than is at the time charged or collected for the transportation of similar quantities of the same class of goods, merchandise or property over a greater distance upon the same road."

Section 3 of the same Act provided that:

> "No railroad corporation shall increase its rates of toll or compensation to be charged for the transportation, receipt, handling or delivery of any property from any point on its line of road to any other point on its line of road by reason of any decrease in its rates which may be required to be made under the first section of this act."

The normal or maximum rates, above which no increase was to be made, were fixed as the rates of the year 1870. It followed in practice that the law established the minimum rates in effect in 1870 upon any railroad in Illinois as the maximum rates for that railroad, so far as the transportation of the same class of goods for equal distances was concerned. This drastic rule was based upon the assumption that the lowest rate voluntarily charged by a railroad could be assumed to be a reasonable rate.

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[1] Buck, *sup. cit.*, p. 126.

[2] Thorpe, *American Charters, Constitutions, and Organic Laws, 1492–1908.*

Still another law in 1871 established a board of railroad and warehouse commissioners of three men, appointed by the governor for terms of two years, with salaries of $3,500 each. The commissioners had no power to fix rates, but the railroads were required to supply them with statistical and other information, and it was their duty to report to the governor annually, and meanwhile to cause prosecutions to be brought for any violations of the law which they might discover.

Finally, an Act regulating the receiving, transportation, and delivery of grain by railroad corporations forbade discrimination between shippers and warehouses in the handling of grain.

Illinois Act of 1873

There was difficulty in enforcing the Illinois Act of 1871, partly because there were no adequate penalties for charging more than the maximum passenger fares provided by the law, and partly because the clauses relating to discrimination were unenforceable by reason of their rigidity. When a case under the freight-rate law reached the state Supreme Court, indeed, that tribunal ruled that the effect of the law was to prohibit all discrimination, not merely unjust discrimination, and that this was impossible under the state constitution because it forbade an Act which might be shown to be perfectly innocent.

Hence in 1873 the law relating to freight rates was repealed, and a new Act substituted for it. This new law forbade unjust discrimination and unreasonable rates. With respect to the particular measure of discrimination, the statute now declared that a difference in charge between persons and places for the same service in the same direction made a *prima facie* case of unjust discrimination, and that in attempting to justify such discrimination the railroad might not allege competition as an excuse.[1] The words "in the same direction" were new in this connection, while the reference to a *prima facie* case meant that the carriers might now submit evidence in justification of a discrimination, and that their practices would not be condemned offhand.

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[1] Third Annual Report of the Illinois Railroad and Warehouse Commission, 1873, p. 162.

Still more important, the new Act provided substantial penalties for extortion, or for making any unjust discrimination as to passenger or freight rates, and directed the Railroad and Warehouse Commission of Illinois to make a schedule of reasonable maximum rates and fares for the transportation of passengers and freight and cars upon each railroad within the state. This legislation remained upon the statute books until supplanted by the law of 1913.

Granger Railroad Legislation in Minnesota, 1871-75

The Granger legislation in Illinois has been described at considerable length, both because it was the first to be placed upon the statute books of the Western states and because it served as a model for later laws.

In Minnesota, the legislature passed an Act in 1871 limiting the charge for passenger transportation to 5 cents per mile and prescribing maximum charges for freight. For the latter purpose freight was divided into five classes. Railroads were declared to be public highways, discrimination was forbidden, and penalties for violation of the Act prescribed; and the same year in another law the office of railroad commissioner was created, with power to investigate railroads and their operations and to make reports.

In 1874, both the Act creating a railroad commissioner and the maximum fare legislation was repealed, and in their stead was enacted a law establishing a railroad commission of three members to be appointed by the governor for terms of two years. These commissioners were directed to make a schedule of maximum rates for each railroad doing business in the state. Unjust discrimination was defined and forbidden, and the commissioners were empowered to enforce the law by bringing suit against offending companies. This statute was modeled upon the Illinois law of 1873; it was repealed in 1875 and a single commissioner was substituted with power to inquire and to report. The new Act also did away with the schedules of maximum rates referred to in the previous law, although it still prohibited unreasonable and discriminatory charges in general terms.[1]

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[1] Saby, *Railroad Legislation in Minnesota, 1849–1897.*

Granger Railroad Legislation in Iowa and Wisconsin, 1874-75

Both in Iowa and in Wisconsin fixed schedules of maximum rates and fares were established by law in 1874. In Wisconsin, a railroad commission of three members was set up, with authority to reduce rates below the statutory level, but not to raise them. In Iowa no railroad commission was created until 1878, when the Railroad Act in that state was repealed; after which a commission functioned in an advisory capacity. Both in Iowa and in Wisconsin the laws contained references to discrimination, and in Wisconsin the consolidation of parallel and competing railroads was made illegal. The Wisconsin law was repealed in 1876, and a single commissioner with supervisory powers was substituted for the mandatory commission created two years before.

Between 1870 and 1886 restrictive railway laws, based more or less upon the legislation in Illinois, Minnesota, Iowa, and Wisconsin, were passed in Missouri, California, Nebraska, Kansas, and Oregon, as well as in a number of Southern states. We shall not describe this legislation, however, but shall content ourselves with comment upon the laws of the four states in which the Granger movement began.

Economic Effect of the Granger Laws

The prompt repeal of most of the so-called Granger laws, and the difficult economic conditions in the Granger states on or about the period at which this legislation was made effective, has led to the general assumption that these laws were ill-devised and destructive. Moreover, the best informed study of the Granger legislation which has been published confirms this assumption by declaring that the maximum rates prescribed in Iowa and Wisconsin during the Granger period were lower than conditions warranted, that the work of the railroad commission in Minnesota was unsatisfactory, and that the Illinois schedules failed to cause trouble largely because litigation postponed their effectiveness until the natural development of business had brought railroad charges below the maxima prescribed by law.[1]

There is, however, another side to the picture. For one thing, there is little evidence that the Granger laws actually caused serious loss to the carriers. Indeed, as has just been said, the Illinois law was not enforced until 1880, and a prolonged contest in Wisconsin seriously interfered with the administration of the new law in that state. Detrick has shown that railroad construction in the Granger states compared favorably with construction during the 'seventies in other states in the West, South, and East, and that the rate of increase of railroad net earnings in these states was well above the average of neighboring commonwealths. Even in Wisconsin, the state which is popularly supposed to have been most unfavorably affected by maximum rate legislation, the increase in average net earnings during the period from 1873 to 1876 was greater than in Indiana, Michigan, or Missouri, and also greater than the average for the Middle states of New York, New Jersey, Pennsylvania, Delaware, Maryland, and West Virginia, or than the average for ten selected Southern states ranging from Tennessee to Florida.[1]

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[1] Buck, *The Granger Movement.*

If the Granger legislation was unduly drastic, at least it was innocuous because only partially enforced.

Nature of Experiments Undertaken by the Granger States

The real significance of the Granger laws is not to be found in their effect upon conditions in the states which passed them, but in the fact that they made certain experiments and provoked certain statements of principle from the courts which proved of great importance in the development of railroad legislation.

The experiments referred to in the preceding paragraph include the following:

1. The establishment of schedules of maximum rates by direct legislative enactment;
2. The establishment of commissions with authority to draw up schedules of maximum rates;
3. The attempt to prevent discrimination between places by "pro-rata" or "short-haul" clauses in the law;
4. The attempt to preserve competition by forbidding the consolidation of parallel lines;
5. The prohibition of the granting of passes to public officials.

By no means all of these experiments proved successful enough to become standard practice in the legislation of the American states. On the contrary, the establishment of rates by direct legislative enactment has been generally unsuccessful in this country, while the enforcement of uniform or pro-rata rates without regard to local conditions has seldom made for the best interests either of the railroad which is subject to them or of the community which the railroad serves. On the other hand, the railroad commission has proved an increasingly useful device, while the prohibition of consolidations between parallel railroad lines at least marked a way which American legislatures have followed for many years.

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[1] Detrick, "The Effects of the Granger Acts," *Journal of Political Economy*, March, 1903. The Southern states referred to in the text are the following: Virginia, Kentucky, North Carolina, Tennessee, South Carolina, Georgia, Florida, Alabama, Mississippi, and Louisiana.

Attitude of the Railroad Managements Toward State Railroad Control

Still more important than the experiments which the Middle Western states launched in the 'seventies through the medium of the Granger laws, was the fact that these statutes, when they reached the courts for review as to their constitutionality, called forth such emphatic declarations of the public nature of railroad employment and of the consequent public responsibility of carriers and their subjection to public control, as to provide a foundation upon which later railroad regulation could securely rest.

Old and clearly formulated as is the law of common carriage, railroad companies in the United States did not, in 1871, recognize the right of the public to control their affairs. Speaking of the railroads' attitude as late as 1882, Judge Reagan of Texas enumerated the pretensions of leading railroad officials and their lawyers as follows:

> "1. They assume that the railroads are private property;
>
> 2. They deny that they are bound by the law of common carriers;
>
> 3. They deny that their roads are public highways;
>
> 4. They assume that their charters constitute a contract between them and the state which amounts to a prohibition against future interference with their management of these corporations by the legislative authority;
>
> 5. They deny, some of them wholly, and some in a qualified manner, the constitutional power of Congress and of state legislatures to regulate and control the terms on which they shall carry merchandise."[1]

This position of the railroad companies to which Judge Reagan refers was contrary to the general theory of the law, even at the time when the Granger Acts were passed, but it was nevertheless an important step in advance when the new state legislation led the courts to reconsider and reaffirm the fundamental doctrine that railroads are subject to public control.

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[1] United States Congress, Forty-seventh Congress, First Session, House Misc. Doc. 55, 1882, Serial 2047, p. 238.

Granger Laws Held to Be Constitutional—Munn v. Illinois

The leading case bearing upon the constitutionality of the Granger laws was that of Munn v. Illinois.[1] This case dealt with a section of the constitution of Illinois relating to warehouses, and, more particularly, with an Act of the legislature of Illinois, passed under the authority of the constitution of 1870, which required the managers of public warehouses in that state to obtain licenses from the circuit court of the county in which the warehouse was located, and to observe certain stated maximum rates for the storage and handling of grain. Munn and Scott were lessees of elevators in Chicago who continued to do a warehouse business without taking out a license, and who charged higher rates than those stipulated by the law. The question at issue in the case was whether the state legislature had authority to pass the law which Munn and Scott had refused to obey, and whether the fixing of maximum rates for the storage of grain deprived the plaintiffs of their property without due process of law, contrary to the Fourteenth Amendment to the Constitution of the United States.

Addressing itself to the question of constitutionality, the United States Supreme Court stated and elaborated upon the principle that there were certain businesses "affected with a public interest" which the public had a right to control. "When," said the court, "one devotes his property to a use in which the public has an interest, he, in effect, grants to the public an interest in that use, and must submit to be controlled by the public for the common good, to the extent of the interest he has thus created. He may withdraw his grant by discontinuing the use; but, so long as he maintains the use, he must submit to the control."

It seemed to the Supreme Court obvious that a public grain warehouse was affected with a public interest, and that the legislature, therefore, had authority to make regulations regarding its use. It was not necessary to the decision in Munn v. Illinois to extend the principle of the decision to railroads, although, as a matter of fact, common carriers were mentioned as illustrations of public business in the course of the court's discussion.

The decision with respect to the warehouse provisions of the Illinois law was promptly followed by declarations with respect to the Granger legislation of Iowa and Wisconsin, in which the principles of Munn v. Illinois were explicitly applied to the case of carriers by rail.

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[1] 94 U. S. 113, 1876.

Other Granger Decisions

In the case of Chicago, Burlington, and Quincy Railroad *v.* Iowa,[1] the Supreme Court ruled that railroad companies were engaged in a public employment affecting the public interest, and were therefore subject to public control under the doctrine of Munn *v.* Illinois. The court therefore dismissed in this case a bill filed by the Chicago, Burlington, and Quincy Railroad Company asking for an injunction to restrain the attorney-general of the state of Iowa from enforcing the Iowa railroad legislation of 1874.

The case of Peik *v.* Chicago and Northwestern Railway Company[2] differed from the foregoing in that the bill was filed by first-mortgage bondholders of the Chicago and Northwestern Railway Company in order to restrain the railroad company from conforming to, and the railroad commission of Wisconsin and the attorney-general of Wisconsin from enforcing, the Wisconsin law of 1874 limiting the rate of charges for transporting passengers and freight on the railroads in that state. The suit was somewhat summarily dismissed, because the principle involved was regarded as settled by previous decisions.

Finally, in Winona and St. Peter Railroad Company *v.* Blake,[3] the Supreme Court upheld the legislation of Minnesota as it had already upheld that of the other Granger states.

By the end of 1876 there had thus come to be in the United States a respectable body of statute law attempting the regulation of railroad companies in various ways, and the constitutionality of this legislation had been upheld by the federal courts. Neither courts nor legislatures have ever subsequently withdrawn the assertion of dominance which the Granger laws and court decisions secured for the organized public interest in railroad affairs. We shall show in the following chapter how the Granger legislation of the 'seventies led to the Interstate Commerce Act of 1887, and what further development occurred during the thirty-five years that followed.

[1] 94 U. S. 155, 1876.

[2] 94 U. S. 164, 1876. See also C. M. & St. P. R. R. *v.* Ackley, 94 U. S. 179; and Stone *v.* Wisconsin, 94 U. S. 181.

[3] 94 U. S. 180, 1876.

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CHAPTER XXVI

THE ACT TO REGULATE COMMERCE AND ITS LATER AMENDMENT

Division of Authority Between State and Federal Governments

Already at the time when the Granger laws were passed, constitutional law in the United States had arrived at certain principles regarding the division of authority between state and national governments. With respect to commerce, it was agreed that the jurisdiction of a state covered commerce within the borders of that state, and that the jurisdiction of Congress extended to commerce which affected more states than one. The Supreme Court had further ruled that, when Congress failed to act, a state might enforce certain regulations relating to interstate commerce in which she was interested, although the Court at the same time declared that there were some types of matters which the state could never regulate, whether Congress acted or did not act, because the authority of Congress with respect to them was exclusive. The extent of the state's concurrent powers in any case depended upon whether the subject which the state sought to control was one which required a single, uniform rule operating everywhere the same, or whether public interest was best conserved by local and diverse enactments. In the one class of cases, inaction by Congress was taken to be equivalent to a decision that no action was desired, while in the other the local authorities were left a comparatively free hand until Congress, by positive action, had occupied the field.[1]

Rule of the Granger Cases

The problem of conflicting jurisdiction presented by the Granger cases will first be presented in a formal diagram.

Let A in the above diagram represent one, and B another state. Let ab, cd, and efg represent shipments. Of these, one shipment, ab, begins and ends in area A; another, cd, begins and ends in area B, and the third, efg, begins in area A and has for destination a point in area B.

Now there is no doubt but that the state governments in A and B have jurisdiction over the hauls ab and cd, nor that the federal government may control the haul efg. But suppose that the federal government has taken no action, and suppose that state A desires to regulate so much of the transportation efg as takes place between e and f, and B so much as takes place between f and g. Have the two states authority? Or, taking a still more general case, suppose that state A wishes to establish a maximum rate per mile to be charged by all railroads within the state. Can a statute fixing such a maximum be enforced as to the portion of the haul efg which lies within state A, and a similar statute be enforced by state B with respect to the portion of the haul efg which lies within that commonwealth?

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[1] Cooley *v.* Board of Wardens, 12 Howard 298, 1851.

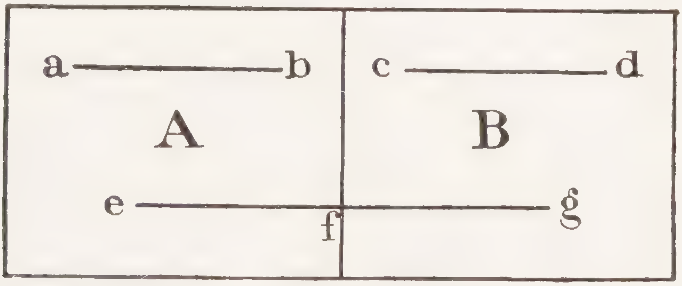

Diagram Illustrating the Decision of the United States Supreme Court in the Granger Cases

Inspection of the facts of the Granger cases will show that they fell within the class of instances illustrated by the diagram. More particularly, in Chicago, Burlington, and Quincy *v.* Iowa [1] the statute at issue divided all the railroads of Iowa into classes according to business, and established a maximum of rates for each of the classes. These maxima applied both to traffic entirely within the state and to traffic which began or ended in other states than Iowa.

In Peik *v.* Chicago and Northwestern,[2] the nature of the statute complained of was the same as that in Iowa, save that the eighteenth section of the law excepted rates on freight which came from beyond the boundaries of the state to be carried across or through the state.

It is clear that the Iowa and Wisconsin statutes of 1874 both applied, in part, to interstate commerce. It did not follow necessarily that the state legislatures had exceeded their authority in these laws, as Congress had taken no action in regulation of interstate railroad rates, but none the less, it was necessary for the courts to decide whether rate regulation was a field in which the powers of the states were concurrent with those of the federal government, or whether interstate rates were among the matters calling for uniform national regulation in a sense which debarred the states from regulating them, even in the absence of action by the federal body.

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[1] 94 U. S. 155, 1876.

[2] 94 U. S. 164, 1876.

There were two Supreme Court decisions or groups of decisions upon this interesting point of constitutional law. The first ruling was to be found in the Granger cases themselves, and in this the power of the states was fully sustained.

> "The law [said the Court in Peik v. Chicago and Northwestern] is confined to State commerce, or such inter-state commerce as directly affects the people of Wisconsin. Until Congress acts in reference to the relations of this company [the Chicago and Northwestern Railway Company] to inter-state commerce, it is certainly within the power of Wisconsin to regulate its fares, etc., so far as they are of domestic concern. With the people of Wisconsin this company has domestic relations. Incidentally, these may reach beyond the State. But certainly, until Congress undertakes to legislate for those who are without the State, Wisconsin may provide for those within, even though it may indirectly affect those without."

The immediate importance of the Granger decisions of 1876 with regard to the relative fields of state and federal authority in railroad rate regulation was that they appeared to make it possible for state governments between them to cover completely the field of interstate as well as that of intrastate railroad transportation.

Wabash, St. Louis, and Pacific v. Illinois

In 1886, however, the rule of the Granger cases in the respect mentioned was overturned by a new decision, rendered in the case of the Wabash, St. Louis, and Pacific Railway Company *v.* Illinois.[1]

The facts in this case may be represented by a diagram similar to that already reproduced upon page 483.

The complaint in the Wabash controversy arose because a certain person was charged $39 for the carriage of goods from Peoria, Illinois, to New York City, while another person was charged $65 for the carriage of a similar quantity of similar articles from Gilman, Illinois, to the same destination. The reason for this was severe competition at Peoria, and less severe competition at Gilman. A greater charge for a shorter than for a longer haul over the same road being forbidden by Illinois statute, the attorney-general of the state brought suit to recover penalty. The railroad admitted that its practice was contrary to local law, but protested that the state statute was unconstitutional. Now this contention clearly had no basis under the rule in the Granger cases, for Congress had taken no more action to control interstate commerce in 1886 than it had in 1876, and according to the Supreme Court, in the absence of action by Congress, it was proper for a state government to protect its own citizens from discriminatory or unreasonable rates even though it should incidentally regulate interstate commerce in so doing. Nevertheless, the Court accepted in 1886 the argument which it had rejected ten years before, after a review of cases in which the inconveniences of state interference with interstate commerce were described. The Supreme Court did not even now deny that there were instances in which state rules might be applied to interstate commerce in the absence of federal action, but it felt that the regulation of railroad rates on interstate freight must be regarded as exclusively within the field of federal authority, and could not safely be remitted to local rule and regulation.

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[1] 118 U. S. 557, 1886.

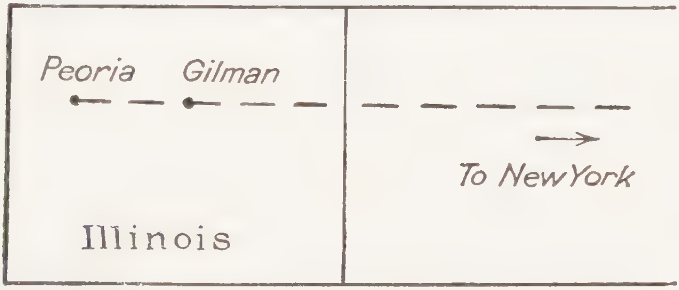

Diagram Illustrating the Decision of the United States Supreme Court in Wabash, St. Louis and Pacific v. Illinois

The moment the Wabash case was decided, it became evident that state legislation with respect to railroads must be supplemented by federal law, or else that a very considerable share of railroad traffic would escape all legislative control. This condition of affairs provided the immediate reason for the passage of the Interstate Commerce Act of 1887, to the consideration of which we shall now turn.

Congressional Discussions and Investigations Prior to 1887

The student should not imagine that the anti-railroad agitation throughout the country in the 'seventies and early 'eighties had passed unnoticed in the federal Congress. Resolutions calling for investigation of the problem of interstate regulation had been presented in the Senate and House of Representatives as early as 1868, and the report of the Windom Committee of 1872, as well as that of a committee of the New York legislature in 1879, known as the Hepburn Committee, had provided members of Congress with a considerable body of authoritative information regarding railroad discrimination and, to a less degree, with data bearing upon the possibility of a lower level of railroad rates. These were the years of the Trunk-Line rate wars, of the railroad discrimination which led to the foundation of great private fortunes in coal and in oil, and of the beginning of complaints respecting the transcontinental system of railroad rates. Proposals for legislation appeared in every session of Congress, though none found place upon the statute books. In 1885 the House and the Senate, through the so-called Cullom Committee, undertook an extensive investigation which, in 1886, resulted in still another elaborate report.

There were three different funds of experience which were available to Congress when it set itself seriously to the task of framing an Act to regulate commerce between the several states. One was the experience of the Granger states and of those other commonwealths that had passed Acts in imitation of the Granger laws. This legislation has been sufficiently described, and will not again be referred to.

The Massachusetts Railroad Commission of 1869

A second type of regulatory enactment which Congress could have duplicated if it had so desired, was that initiated by Massachusetts and followed by some other Eastern states. The Massachusetts statute of 1869 has been highly praised. The railroad commission which it established consisted of three men appointed by the Governor for three-year terms, with power to prescribe the form of annual return rendered by railroad corporations, to supervise the railroads "with reference to the security and accommodations of the public," and to undertake certain duties of inspection, investigation, arbitration, and report. The Commission was subsequently given authority to prescribe a system of accounts which every corporation operating a railroad was required to follow. No railroad could be opened for use until the board had examined it and certified that the laws relating to its construction had been observed, and that it appeared to be in a safe condition. No railroad could be constructed across another at the same grade or across navigable waters without the consent of the commissioners. No railroad corporation might locate or construct its road until a sworn estimate of the cost of construction had been submitted to the board and the board had been satisfied that a certain amount of the stock had been paid in.

The commission had supervision of the relocation of freight and passenger stations. It could revise the tariff for the care and carriage of milk. It could regulate the fares established by street railroad companies, but not so as to reduce their profits below a certain percentage upon the cost of the road. It could make rules regulating the transportation of explosives, the violation of which subjected a corporation to heavy penalties. It could approve of the use of certain mechanical appliances and by written notice revoke such approval. It could fix the route of a railroad in a city or town when the town or city authorities could not agree with the directors of the railroad concerning it.

The positive powers of the Massachusetts Railroad Commission have been emphasized in the foregoing enumeration in order to show that the Commission was not, as is sometimes assumed, merely an investigating and reporting agency. Its position in the group of American regulatory bodies has been determined, however, rather by what it could not, than by what it could, do. Notably, the Commission could not fix a rate, or require a railroad to change its methods of operation or add to its equipment, or generally enforce existing laws, except by investigation and presentation of facts to the state attorney-general for such action as he might deem expedient or by inclusion of its conclusions in an annual report to the legislature.

These characteristics of the law earned for the Massachusetts Commission the name of a weak, or advisory, commission as contrasted with commissions exercising mandatory powers over railroad rates, as in Wisconsin and in Illinois. It is much to the credit of the Massachusetts body that, with limited powers, it attained for itself a position of influence which gave its advice weight. Much greater authority in the hands of the California Commission eleven years later led to less beneficent results. The Massachusetts Commission is credited with causing the introduction of improvements and economies in the railroads in Massachusetts, such as the automatic block system, continuous or train brakes, and gradual elimination of grade crossings, with the reform of the system of railroad bookkeeping in the state, and with bringing about a steady decline in the average passenger and ton-mile receipts upon Massachusetts railways.[1]

Doubtless it had some influence in these matters. It should be observed, however, that much of the Commission's achievement lay in the fields in which it possessed positive authority, and that the tendency to rate reductions in Massachusetts during the 'seventies and 'eighties, to which its friends allude, and which it had no authority to enforce, was by no means confined to the railroads which lay within its jurisdiction and probably resulted from causes over which it had little control. The trend of regulatory development in the United States has been in the direction of the strong rather than in that of the weak commission, and the Massachusetts type has not maintained itself even in the state whose name it bears.

The English Railway and Canal Commission of 1873

Still a third source of instruction lay in English experience. In England the necessity for some kind of national control over railroad corporations had been felt even earlier than in the United States. We may anticipate the discussion in Chapter XXX by mentioning at this point, first, the English Consolidation of Clauses Act of 1845, which laid down standard terms for the guidance of Parliament in granting charters, then the Act for the Better Regulation of the Traffic of Railways and Canals, passed in 1854, and finally, the Act erecting a Railway and Canal Commission, passed in 1873.

The English law of 1854 prohibited extortion and discrimination in general terms, and required railways and canals to afford reasonable facilities to each other and to the public. The principal duty of the Commission of 1873 was to hear complaints and to determine controversies arising under the earlier law. Within these limits the Commission had the power to render binding decisions, which the English courts would enforce. This was a greater power than the Massachusetts Commission ever exercised. On the other hand, the English Parliament had not, in 1873, prescribed schedules of maximum railroad rates except through charter provisions, and the English Commission did not, like some of the Western American commissions, possess the general rate-fixing power.

By 1887, therefore, Congress had not only an incentive to immediate action in the Wabash decision of 1886, but it was able to draw upon the experience of American and English legislation running over a period of more than fifty years, and it was pushed forward by an aroused public opinion, offended by current railroad practices, and strongly in favor of an increased measure of public control over the railroad industry. It is not surprising that these circumstances led to the enactment of an interstate commerce law.

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[1] Hendrick, *Railway Control by Commissions*, 1900; Crafts, "The Massachusetts Railroad Commission," *Engineering Magazine*, x, 286, 1895.

The Interstate Commerce Act of 1887

The attempt will now be made to summarize in a few pages the important provisions of the Act to Regulate Commerce, up to but not including the Transportation Act of 1920. The reader is asked to remember that this law began as a comparatively simple statute designed to supplement state law, but that it has grown to a code of over two hundred pages, closely linked to a considerable body of decisions by state and federal courts which deal with questions of interpretation or pass upon points of constitutional law. For convenience, the discussion in this chapter will be divided into two parts: first, presentation of the significant clauses of the Act to Regulate Commerce as passed in 1887; and, second, enumeration, and classification of amendments up to the passage of the Transportation Act of 1920. A third section, containing the analysis of the Amendment of 1920 and the consideration of the work of the Interstate Commerce Commission, as expressed in its recent reports, will be postponed to later pages of this book.

The principal provisions of the Interstate Commerce Act of 1887 were as follows:

Scope of the Law

> "The provisions of this act shall apply to any common carrier or carriers engaged in the transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both are used, under a common control, management, or arrangement, for a continuous carriage or shipment from one State or Territory of the United States, or the District of Columbia, to any other State or Territory of the United States, or the District of Columbia, or from any place in the United States to an adjacent foreign country, or from any place in the United States through a foreign country to any other place in the United States, and also to the transportation in like manner of property shipped from any place in the United States to a foreign country and carried from such place to a port of transshipment, or shipped from a foreign country to any

> place in the United States and carried to such place from a port of entry either in the United States or an adjacent foreign country: *Provided, however,* That the provisions of this act shall not apply to the transportation of passengers or property or to the receiving, delivering, storage, or handling of property, wholly within one State, and not shipped to or from a foreign country from or to any State or Territory as aforesaid.
>
> "The term 'railroad' as used in this act shall include all bridges and ferries used or operated in connection with any railroad, and also all the road in use by any corporation operating a railroad, whether owned or operated under a contract, agreement, or lease; and the term 'transportation' shall include all instrumentalities of shipment or carriage. . . ."

The new law applied to the carriers who handled the different varieties of transportation usually called interstate or foreign. After 1887 there could be no question but that authority in the states with respect to this commerce did not exist. The scope of Paragraph 2 of the Act has been greatly extended since 1887, as will presently appear.

Reasonableness of Rates

> "All charges made for any service rendered or to be rendered in the transportation of passengers or property as aforesaid, or in connection therewith, or for the receiving, delivering, storage, or handling of such property, shall be reasonable and just; and every unjust and unreasonable charge for such service is prohibited and declared to be unlawful."

This statutory declaration added nothing to the common-law rule, but operated to confer jurisdiction over questions of reasonableness upon the Commission later to be erected. It is significant that Congress did not embody a schedule of maxima in the law. It was much wiser to lay down a principle and to rely upon administrative action for the application of the principle to concrete cases.

Facilities

> "Every common carrier subject to the provisions of this act shall, according to their respective powers, afford all reasonable, proper, and equal facilities for the interchange of traffic between their respective lines, and for the receiving, forwarding, and delivering of passengers and property to and from their several

> lines and those connecting therewith, and shall not discriminate in their rates and charges between such connecting lines; but this shall not be construed as requiring any such common carrier to give the use of its tracks or terminal facilities to another carrier engaged in like business."

The facilities clause of the Interstate Commerce Act was taken, with some modifications, from the English Railway and Canal Traffic Act of 1854. It has proved comparatively ineffective. The American public has not suffered from any unwillingness of the railroads to develop through traffic, although, on the other hand, common carriers have picked and chosen among their connections, almost at will. It is only since 1910 that the Interstate Commerce Commission has had full authority to establish through routes and to compel their unrestricted operation.

Discrimination

> "That if any common carrier subject to the provisions of this act shall, directly or indirectly, by any special rate, rebate, drawback, or other device, charge demand, collect, or receive from any person or persons, a greater or less compensation for any service rendered, or to be rendered, in the transportation of passengers or property, subject to the provisions of this act, than it charges, demands, collects, or receives from any other person or persons for doing for him or them a like and contemporaneous service in the transportation of a like kind of traffic under substantially similar circumstances and conditions, such common carrier shall be deemed guilty of unjust discrimination, which is hereby prohibited and declared to be unlawful.
>
> "That it shall be unlawful for any common carrier subject to the provisions of this act to make or give any undue or unreasonable preference or advantage to any particular person, company, firm, corporation, or locality, or any particular description of traffic, in any respect whatsoever, or to subject any particular person, company, firm, corporation, or locality, or any particular description of traffic, to any undue or unreasonable prejudice or disadvantage in any respect whatsoever."

The language of the two preceding paragraphs, like that relating to "facilities" is reminiscent of the English Act of 1854. The English law was, however, much briefer. Attention should be called to the fact that only "undue" or "unreasonable" preferences were prohibited, also to the conception of preference for or against localities as distinct from preference for or against the persons who live in localities.

Long and Short Hauls

The provisions of the Interstate Commerce Act on the subject of greater charges for shorter than for longer hauls have been fully discussed in Chapter XV.

Anti-pooling Clause

> "That it shall be unlawful for any common carrier subject to the provisions of this act to enter into any contract, agreement, or combination with any other common carrier or carriers for the pooling of freights of different and competing railroads, or to divide between them the aggregate or net proceeds of the earnings of such railroads, or any portion thereof; and in any case of an agreement for the pooling of freights as aforesaid, each day of its continuance shall be deemed a separate offense."

Pools were unenforceable, but not illegal at common law. The railroads maintained that competition would force them to discriminate unless they were allowed to pool, and the argument has some force. In later years, as we have seen, the opposition to pooling has subsided, but in 1887 public opinion regarded agreements between railroads as a prelude to extortion, and state and national legislatures alike believed that they must be suppressed. The experience upon which this opinion was based was American experience, and the anti-pooling clause is an American contribution to the practice of railroad regulation. The student may review earlier chapters of this book for facts regarding the history and operation of pools in the United States before 1887.

Interstate Commerce Commission

> "That a Commission is hereby created and established to be known as the Inter-State Commerce Commission, which shall be composed of five Commissioners, who shall be appointed by the President, by and with the advice and consent of the Senate. The Commissioners first appointed under this act shall continue in office for the term of two, three, four, five, and six years, respectively, from the first day of January, anno Domini eighteen hundred and eighty-seven, the term of each to be

> designated by the President; but their successors shall be designated for terms of six years. . . . Not more than three of the Commissioners shall be appointed from the same political party. No person in the employ of or holding any official relation to any common carrier subject to the provisions of this act, or owning stock or bonds thereof, or who is in any manner pecuniarily interested therein, shall enter upon the duties or hold such office. Said Commissioners shall not engage in any other business, vocation, or employment. . . .
>
> . . . .
>
> "That each Commissioner shall receive an annual salary of seven thousand five hundred dollars. . . . The Commission shall appoint a secretary who shall receive an annual salary of three thousand five hundred dollars. . . . The Commission shall have authority to employ and fix the compensation of such other employees as it may find necessary to the proper performance of its duties."

Comparison of the Interstate Commerce Commission with Other Commissions

The tabular statement on the following page compares the Interstate Commerce Commission with respect to term of office, salary, and number of commissioners, with a selected list of other established railroad commissions with which Congress was familiar in 1887:

Of the selected representative railroad commissions included in this table, the English and the Massachusetts Commissions were mentioned at the beginning of this chapter. The Connecticut Commission was an example of a group of supervisory organizations early established in New England in order to lessen the number of railroad accidents and to supply the legislature with certain types of information, and the remaining bodies were more or less the direct result of the Granger agitation of the 'seventies. The resemblance between these various state commissions and the new federal body is sufficiently close to show that Congress was treading upon well-beaten ground. It certainly followed the standard practice of the time in making the Interstate Commerce Commission an appointive rather than an elective body, while the comparatively liberal salary fixed in the Interstate Commerce Act and the comparatively long tenure of federal as contrasted with state commissioners was a natural recognition of the larger responsibilities which the former were compelled

COMPARISON OF THE INTERSTATE COMMERCE COMMISSION OF 1887 WITH OTHER COMMISSIONS ESTABLISHED IN THE UNITED STATES AND IN ENGLAND PRIOR TO THAT TIME

Name of Commission	Year established	Number of members	Tenure (Years)	Salary	How Chosen
United States Interstate Commerce Commission	1887	5	6	$ 7,500	App'td by President
English Railway and Canal Commission[1]	1873	3	5	15,000	Appt'd by King
Connecticut Railroad Commissioners	1853	3	3	$3 per day	Appt'd by Governor
Massachusetts Board of Railroad Commissioners	1869	3	3	4,000	Appt'd by Governor
Illinois Railroad and Warehouse Commission	1871	3	2	3,500	Appt'd by Governor
Minnesota Railroad Commissioners	1874	3	2	3,000	Appt'd by Governor
Iowa Railroad Commissioners	1878	3	3	3,000	Appt'd by Governor
California Board of Railroad Commissioners	1880	3	4	4,000	Elected
Georgia Railroad Commission	1879	3	6	2,500	Appt'd by Governor
Wisconsin Railroad Commission	1874	3	3	1,250	Appt'd by Governor

to bear and the evident necessity of enlisting the service of able men in the administration of the interstate commerce law.[2]

In 1906 the membership of the Interstate Commerce Commission was enlarged to seven, the salaries were increased to $10,000 annually, and the term of office was made seven years.[1]

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[1] The English Act of 1873 authorized salaries not to exceed 3,000 pounds annually. The tenure of the commissioners was not directly fixed, but the term of the law of 1873 was set in the Act itself as five years, and thenceforth until the end of the next session of Parliament. This set a minimum of five years upon the tenure of the commissioners, although with the possibility of a longer term of office. As a matter of fact, the Commission of 1873 was continued from year to year until 1888. In 1888, the fundamental law governing the Commission was changed, but one of the original members, Sir Frederick Peel, continued, nevertheless, in office until 1905, a term of thirty-two years.

The salary of a member of the United States Congress was, in 1887, only $5,000.

Two more members were added in 1917,[2] and two more in 1920,[3] when salaries were raised to $12,000, where they now stand. The Commission now consists of eleven members, holding office for seven years.

According to the Act of 1887, the Interstate Commerce Commission had the following powers with regard to common carriers subject to the Act to regulate commerce:

1. To inquire into the management of the business of common carriers.
2. To require annual reports.
3. To require a uniform system of accounts, and to prescribe the manner in which such accounts shall be kept.
4. To hear complaints or to make investigations relating to violations of the act.

Penalties and Procedure

The original law of 1887, as amended in 1889, provided penalties of fine not to exceed $5,000, or, in case the offense was an unlawful discrimination, also of imprisonment not to exceed two years for violation of the Act. Both penalties were applied to officers and employees of railroad corporations rather than to the corporation itself, for reasons which are obvious, at least where imprisonment is concerned, and to officers or agents of corporations who delivered property to railroads for transportation, and knowingly and wilfully, by false billing, false classification, etc., obtained transportation at less than the established rates. Besides this, damages could be recovered from the carrier by injured parties.

The procedure in case of complaint required, first, a petition to the Commission by a proper party alleging violation of the Act; then followed an investigation by the Commission, and a finding of facts as the Commission discovered them to exist. This finding could then serve as *prima facie* evidence of the facts found in a jury trial in court following indictment of the accused. Or, in cases which did not involve misdemeanors, the Commission's report was to be communicated to the offending carrier with an order to desist from the practices found to be illegal. In case the carrier failed to obey, the Commission was then to apply to the Circuit Court having jurisdiction for a restraining order. The Court was expected to make appropriate inquiries, using the Commission's report as *prima facie* evidence, and, in the event that the Court was satisfied that the carrier was in disobedience of the Act, the restraining order asked for was to issue, and the carrier was to be penalized in case of further failure to conform.

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[1] 34 Stat. 548.

[2] 40 Stat. 270.

[3] 41 Stat. 497.

The Commission did not have power to prescribe schedules of rates, nor even to order a carrier to put a named rate into effect in order to settle a particular controversy, although for a time the Commission believed that it had the latter power. Its authority was limited to requiring a carrier to desist from unreasonable or discriminatory rates or practices. It therefore stood, with respect to power, between the advisory type of railroad commission exemplified by the Massachusetts Board, and the mandatory railroad commissions of Illinois and Wisconsin.

Miscellaneous Provisions

Other clauses of the Act of 1887 called for publicity of railroad tariffs, stipulated for ten days' notice of advances in rates, provided for assessment of damages, for an annual report by the Commission to the Secretary of the Interior, and for other matters, generally of minor importance.[1]

While statutory regulation of common carriers began, in this country, in the several states, and while it was as a result of state legislation that the authority of American legislatures over railroad corporations became firmly established, the further development of the technique of railroad control took place principally in connection with the federal law from which extracts have just been given. Indeed, even the later recrudescence of the state railroad commission idea marked a borrowing back of the results of federal experience by the states, much as the initiation of federal control benefited by the still earlier experience of the American commonwealths.

Enumeration of Amendments to the Act to Regulate Commerce

The first amendment to the Interstate Commerce Act was in 1889. Other amendments followed in 1903, 1906, 1910, and 1920.

It should be remembered that Congress, in addition to the statutes mentioned, has also frequently amended the Interstate Commerce Act by indirection. This was done, for instance, in the Acts of 1891 and 1893 relative to testimony before the Interstate Commerce

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[1] In 1889 the Interstate Commerce Act was amended so as to require three days' notice of a reduction in rates, as well as ten days' notice of an advance.

Commission, as well as in the Act of 1895 authorizing the issue of joint interchangeable 5,000-mile tickets. The last of these laws was intended to furnish a direction to the Interstate Commerce Commission, the others enabled it to compel the testimony of witnesses without running counter to the constitutional provisions against forced testimony.

Much, indeed, of the present staff of the Interstate Commerce Commission is employed in duties which were no part of the Commission's functions as originally conceived. This, for instance, is true of regulation under the boiler-inspection Act, the safety-appliance Acts, the so-called Ashpan Act, and the Hours-of-service Act. In these instances the Commission has been selected as the appropriate agent to carry out new purposes entertained by Congress. The same can be said of the duties imposed upon the Commission of coöperating with the Shipping Board in developing port and transportation facilities in connection with water commerce, of determining the limits of zones of standard time, and of enforcing the Clayton Anti-Trust Act in so far as applicable to common carriers. Like Shaw's Swiss soldier, the Interstate Commerce Commission has done its regular work so well that additional tasks have been piled upon it.

Summary Statement of Important Amendments to the Act to Regulate Commerce

Act of 1889

The changes in this Act were in some instances little more than verbal. Thus tariffs were to be posted in two public and conspicuous places in each depot instead of being only "kept;" they were to be, in addition, "accessible to the public," and they were to be placed where they could be conveniently inspected. The Commission was also now for the first time authorized to hire offices and to publish its reports.

The amendment of 1889, however, also did a few things of greater importance. Thus, it stipulated for three days notice of declines in rates. It made some changes in the procedure for enforcement of the law, and it introduced for the first time the penalty of imprisonment for certain offenses defined in the Act.

Act of 1903

The Act of 1903 is popularly known as the Elkins Act; its chief provisions were as follows:

1. The Elkins Act removed the penalty of imprisonment inserted

in the Act to Regulate Commerce by amendment in 1889, substituting fines ranging from $1,000 to $20,000 for each offense.

2. The fines contemplated by the new law were made assessable against offending railroad corporations, as well as against their officers and employees, and the corporation was made liable for any acts which, if committed by its officers or employees would render these latter guilty of a misdemeanor. The personal liability of corporation servants was, however, still retained.

3. It was made unlawful to receive as well as to give rebates or other concessions in rates. This provision is to be compared with the more limited clauses of the older law penalizing consignors or consignees who obtained transportation at less than the established rates by means of false billing, false classification, or similar deception.

4. Prosecution of violations of the Act was made easier in two ways. In the first place, the Elkins Act forbade all concessions which resulted in the carriage of property at less than the published rates, thus simplifying the proof in cases in which discrimination was charged by making it unnecessary to show that one shipper had paid less than his neighbor if it appeared that he had paid less than the published rate; and secondly, the new law allowed suits to be prosecuted in any court of the United States having jurisdiction of crimes within the district through which the transportation in question might have passed, as well as in the district in which the violation of law took place.

The Elkins Act proved distinctly helpful in the administration of the Act to Regulate Commerce, even though subsequent legislation reintroduced the penalty of imprisonment which it took out of the law. It was, nevertheless, only a statute of detail, making no great change in either the theory or the practice of regulation.

Act of 1906

This law is known as the Hepburn Act, from its sponsor in the House of Representatives. It was the most important regulatory railroad statute passed between 1887 and 1920.

The Hepburn Act made no change in the wording of the paragraphs relating to reasonableness of rates, facilities, discrimination, long and short hauls, and pooling, as quoted in previous pages of this chapter, nor in the Elkins Act, except as subsequently mentioned. These clauses continued to express the underlying purposes of federal regulation.

There were, however, important changes in other sections of the law. We have already noticed that the Interstate Commerce Commission was enlarged in 1906 and the salaries of its members raised. The jurisdiction of the Commission was at the same time more explicitly defined so as to include within its scope many railroad activities or activities of organizations connected with railroads about which there was the possibility of dispute. Thus the Commission's authority over express companies was now for the first time mentioned in the law, as was that over railroad switches, spurs, terminal facilities, sleeping-car companies, pipe lines, and private cars, while its jurisdiction over all services rendered in connection with the elevation and transfer in transit, ventilation, refrigeration, or icing of property transported, as well as over receipt, delivery, and storage, was explicitly recognized. The Commission could doubtless have regulated these various agencies and facilities in any case if regulation had been necessary to effective control over other subjects formally and directly intrusted to its care, yet the matter admitted of doubt in particular cases, and it was well to have it settled.

The Hepburn Act also gave to the Interstate Commerce Commission the power to fix a maximum railroad rate. This was an important advance, in some respects the most important accomplished by the Act of 1906. Thirty day's notice was now required either for a reduction or for an advance in rates.

The Hepburn Act added to the discrimination provisions of the earlier laws both by enlarging the jurisdiction of the Interstate Commerce Commission and in three other ways as well:

1. For the first time the issue of passes was specifically forbidden. The original Act of 1887, as amended in 1889, had prohibited discrimination only, in general terms, with the proviso that nothing in the Act should prevent the free carriage of certain enumerated classes of persons. The Hepburn Act now dealt with the pass evil directly, while at the same time it relisted and extended the exceptions. The list of persons to whom passes might be issued now included officers and employees of the pass-issuing roads and their families, ministers of religion, inmates of homes for sailors and soldiers, mail-service employees, and a considerable group of other parties. The issuance of passes to persons upon the list was, of course, only permissible, not compulsory.

2. The penalty of imprisonment, removed by the Elkins Act, was restored, and made applicable to both the receiver and the giver

of a rebate, while the recipient of the favor was required, as well, to forfeit three times the value of the consideration received.

3. The law now expressly forbade one practice out of which discrimination had grown in the past—namely, the mining and transportation of coal by companies which owned and operated both railroads and mines. The clause of the Hepburn Act relating to such common activities is known as the "Commodity Clause." It has had a somewhat checkered history, and has been only partially effective, but it was intended to, and to some extent has, operated to prevent discrimination.

With respect to law enforcement, the Hepburn Act also made significant changes. Under this new law, as under the original Act of 1887, the Commission might act upon its own initiative, or upon complaint. When proceedings resulted in an order by the Commission requiring a carrier to pay money to injured persons, this order was enforceable in court, where it was handled like any other civil suit for damages. The difference between this and earlier procedure was immaterial.

But in cases where the Commission's order was not for payment of money, but called upon the carrier for some other action such as the reduction of a rate, the order now became effective within the time limit set in the order, unless suspended by court action, and penalties ran from the effective date of the order. The difference between this and the preceding rule was that the carrier was forced to take the initiative in order to prevent the Commission's order from becoming effective, while under the old procedure the Commission was forced to apply to the courts before its decision could be enforced, and penalties began only with the issuance of a court decree. The difference was technical, but important.

Act of 1910

The principal changes introduced by the Mann-Elkins Act of 1910 related to the following points:

The long- and short-haul clause of the Act of 1887 was amended by the excision of the words "under substantially similar circumstances and conditions." This seemingly unimportant alteration had the effect of reviving a section of the statute which, by reason of court decisions, had lost most of its original significance. A full discussion of the changes in Section 4 of the Interstate Commerce Act, with illustrations of the types of rate-making to which the clause refers has already been presented in Chapter XV.

The Interstate Commerce Commission was now given the power to suspend proposed changes in rates or classification for 120 days, pending investigation of the reasonableness of the change. If hearings with respect to the new rates were not completed within the 120 days, the Commission was authorized to continue suspension for a further period of six months (reduced in 1920 to thirty days) after which time the changes were to become effective unless the Commission should meanwhile disapprove of them.

This clause was based upon the belief that the public was insufficiently protected by the shipper's right to protest against new rates as unreasonable and ultimately to recover, if successful in his protest, the difference between the new and the old rate upon the shipments made during the period of litigation. For if the shipper protected himself against the change in rates by an advance in the price of his goods during the interim period, the burden was, at least in part, borne by the purchaser, and the shipper was not entitled to full reparation. While if the shipper was prevented from making sales, and did not ship by reason of the higher rates, he suffered a loss, but had no legal basis for a claim for reparation. These considerations, together with the additional reflection that the presumption of reasonableness attached rather to rates actually in force than to rates newly proposed, led Congress to empower the Commission to maintain rates upon the old basis during the period of investigation, when changes were proposed upon which the interested parties could not agree.

A Court of Commerce was created, with exclusive jurisdiction of the following types of cases:

1. All cases for the enforcement of any order of the Commission other than for the payment of money, where enforcement did not involve the collection of a forfeiture or penalty, or the infliction of criminal punishment.
2. All cases brought to enjoin or set aside in whole or in part any order of the Commission.
3. Suits brought under the Elkins Act to enjoin illegal discriminations or departures from published rates.
4. Suits brought under Section 20 of the Act to Regulate Commerce, praying for the issuance of writs of mandamus, to compel the filing of proper reports or the keeping of prescribed accounts, and under Section 23, to compel the movement of interstate traffic or the furnishing of facilities.

The Court of Commerce was designed to take the place of the federal circuit courts in the adjudication of cases falling within the definitions of the preceding paragraphs. Appeals lay directly to the Supreme Court of the United States. The Commerce Court was manned by five judges, newly appointed by the President of the United States, with salaries of $8,500 each. It was hoped that the substitution of one trial court for many would promote uniformity of decision, reduce delay, and develop expertness on the part of the judges concerned. The court was not, however, successful, and it was abolished by Act of October 22, 1913.[1]

Besides the sections mentioned, the Act of 1910 contained clauses relative to the routing of freight, the misquotation of rates, the regulation of the issuance, forms, and substance of tickets, bills of lading, etc., and other minor provisions which it is not necessary to describe.

Act of 1920

The last, and in many respects the most important, legislation with respect to the federal regulation of railroads and other interstate carriers in the United States was passed in the year 1920, following the conclusion of the World War and slightly preceding the return of the railroads to private management on March 1, 1920. This statute will be discussed in Chapter XXIX.

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[1] 38 Stat. 208.

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CHAPTER XXVII

RAILROAD ORGANIZATION IN TIME OF WAR

Railroads Little Used in Actual Battle

All previous legislation with respect to railroads in the United States was profoundly affected by the entrance of the United States into the World War in April, 1917. Indeed, the magnitude of this European conflict, and the increasing probability, as time went on, that the United States would become involved, caused some legislation to be passed and some preliminary action to be taken by the carriers even before the United States was formally at war.

In surveying the part which railroads played in the conflict of 1914-18, one is struck by several significant facts.

Generally speaking, railroads were not used in actual battle. There were, it is true, some exceptions to this, such as the use of armored cars and the transportation and firing of heavy artillery along prepared tracks. For the most part, however, the comparative immobility of the railroad line and the high serviceability of railroad track and equipment in indirect military or nonmilitary use led to the employment of railroad facilities well behind the firing line rather than in the immediate presence of the enemy. Moreover, speaking again in a large way, the area of actual conflict in the World War was always small. It comprised only a narrow fringe separating the fighting forces, behind which were the great organized districts in which men were assembled, trained, armed, and prepared for action, and supplies produced, gathered, and placed convenient for distribution. Indeed, in countries such as the United States and Great Britain, the use of railroads in a direct military way was in the nature of things impossible.

Military Services of Railroad Organizations

Apart, therefore, from a minimum use of railroad facilities in actual conflict, and omitting also, as outside the picture, the normal service of the railroads during war time in supplying the peace-time needs of their communities which continued in time of war, the chief activities of the railroads between 1914 and 1918 may be listed as follows:

1. The movement of troops and their immediate equipment behind the fighting lines, and from the rear to points sufficiently near

to the fighting lines to permit of the completion of the trip by foot or by automobile. These movements included, in the first instance, the work of mobilization or the initial organization of armies, and then later the work of maneuver. When armies were on the march, the railroads also aided such displacements.

Naturally, the service of troop transportation was heaviest in France, where most of the fighting took place, and in Germany, a country which not only had a problem of mobilization, but also carried out from time to time a shifting of forces from one to the other of her various fronts.

2. The evacuation of wounded. A steady stream of wounded men moved back from the front to dressing stations, evacuation hospitals, and then by train to distributing centers located at some distance from the firing line. In England, medical depots were established at the larger ports for the landing of wounded from the fleet, and ambulance trains were prepared for the service of these towns as well as for the movement of sick or wounded from the naval base in Scotland to southern points, or on other service as needed.

3. The transportation of munitions and supplies to the front. The volume of this movement was at all times impressive, especially during the later years of the war.

4. The intensive service of industry and agriculture so as, in each country, to increase to the utmost the production of food, munitions, miscellaneous war supplies, and the raw materials necessary to maintain this output at a maximum. This movement, as well as that referred to in the preceding paragraph, was certainly as heavy in the United States as in any of the other countries engaged in the World War.

Advantages of Government Operation in Time of War

The successful operation of a railroad net for war purposes demands a very high degree of subordination of private interest to the accomplishment of a national purpose. It, therefore, can usually be best accomplished through direct government control. The advantage of government management is accentuated by the fact that the needs of war make unequal demands upon different parts of a railway system. There are inevitably diversions of traffic which tend to increase the traffic and earnings of some railways and at the same time tend to decrease the earnings of others. Doubtless railroad owners must expect, like other citizens, to make sacrifices for the common good, but they may properly object to burdens that are disproportionate to the load which other classes in the community are called upon to bear. On the other hand, war should not become a source of profit to anybody, and increased railroad earnings by reason of the movement of military traffic are objectionable. This again argues for government management, or, at least, for rigid government control.

War Organization in Germany

The problem of railroad management in the principal European countries was handled during the war consistently with the principles above laid down. The solution was simplest in Germany, where the railroad net was almost entirely state owned before the outbreak of hostilities. Here the change which occurred was merely that of transferring supreme authority from the governments of the German states such as Prussia and Bavaria to an Imperial Inspector-General of Railroads. Operation continued in the hands of the old civil personnel except in the theater of war, where the military authorities assumed full control. The direction of affairs was everywhere intrusted, however, to representatives of the nation as a whole as distinguished from representatives of sections. Since the costs of railroad operation even in peace time were chargeable to public funds, no hardship to private property-owners resulted from the changes which were made.

War Organization in France

In France, unlike Germany, most of the railroads were privately owned before the war. Here also, however, the government took over the responsibility of operation at the outbreak of the war. Railroads in the field of activity of the different army groups were placed under the control of a director of military transport appointed by the Commander-in-chief in consultation with the Minister of Public Works. Other lines took orders from a section of the General Staff, which at first reported to the Ministry of War, but which, by successive steps in 1916, 1917, and 1918, was placed under the authority of the Minister of Public Works. The theory of the supremacy of the Minister of War seems to have been retained, but this officer delegated a certain portion of his war-time authority to his colleague in the ministry.[1] Obviously the latter possessed an organization more familiar with railroad affairs than the War Department could supply, and it was the part of wisdom to continue to make use of his facilities. The peace-time personnel of the railroad companies was, in so far as was possible, retained. Not unnaturally there were heavy deficits, but these were ultimately assumed by the national government.

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[1] Thevenez, Réné, "La législation et le jurisprudence des voies ferrées de 1914 a 1920." *Annales des chemins de fer et tramways*, June, 1920. Even at the beginning

War Organization in England

Railroads in England were historically less closely associated with the government than railroads in Germany or in France, and some hesitation might have been expected in this country over the seizure of the transportation system by public agents. As a matter of fact, there was no hesitation whatsoever. War was declared on August 4, and on the same day the government issued an Order in Council stating that it was expedient that the government should have control over the railways in Great Britain, and announcing that this control would be exercised through an executive committee of general managers acting under the chairmanship of the president of the Board of Trade. The Irish railways were not taken over until later. In practice, the committee of general managers left the routine management of British railroads to the peace-time organizations of the several companies, but exercised authority over all railroad questions that had a bearing on national requirements in prosecution of the war.

In order to protect the interests of the owners of British railway securities, the government undertook to compensate the railroads for any loss or injury which they might sustain by reason of government operation, and also to pay them the sum by which the aggregate net receipts of the railways, for the period during which the government was in possession of them, fell short annually of the aggregate net receipts for the year ending December 31, 1913. If the net receipts of the companies for the first half of 1914 turned out to be less than the net receipts for the first half of 1913, the sum payable was to be reduced in the same proportion. This agreement was subsequently modified in detail, but in its main outlines the arrangement lasted for the period of the war.[1]

The war-time experience of Germany, France, and England illus-

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the Minister of War sought the advice of the Minister of Public Works upon certain classes of subjects, and the latter continued to act in matters relating to policies of permanent control.

[1] Departmental Committee on Railway Agreements, Report and Appendices, British Sessional Papers, 1921, vol. xvii, Cd. 1132.

trates the tendency everywhere in Europe for the governments of belligerent powers to take immediate charge of their systems of railroad lines in order to direct their use for military purposes and to facilitate the abundant production of commodities needed in the prosecution of the war.

Railroad Committees in the United States, 1915-17

This tendency made itself felt in the United States more slowly than in England or upon the Continent, because the United States was farther removed from the seat of war. Moreover, the tradition of private operation was stronger in this country than it was abroad, and more was expected from private management. Many believed, even as late as the end of 1917, that the superior efficiency of private control offset the inclination of individual railroads to pull apart and the possibility of conflicts between public and private interest.

There was little preparation for war service in the United States in 1914 or in 1915. In 1915, the American Railway Association set up a Committee of Five on Coöperation with the Military Authorities that rendered some service at the time of threatened trouble on the Mexican border. About a year later, the Association appointed a Commission on Car Service to sit in Washington and to work in daily consultation with the Interstate Commerce Commission on car-service matters. This Commission, reconstituted in 1917, operated through the period of private control, and later became the Car Service Section of the United States Railroad Administration. Both the Committee on Coöperation and that on Car Service were able to supply the federal administration with advice, and to afford it useful contacts with the railway managements of the country. In addition, the Car Service Committee had some authority to add to and to modify car service and per-diem rules.

In February, 1917, the Special Committee on Coöperation with the Military Authorities was enlarged by fourteen members, and in April the committee was further enlarged to a membership of twenty-five, out of which the chairman was directed to appoint an executive committee of five, including himself. The Committee on Car Service was now made a subcommittee of this executive committee. The railroads of the country at this time met, through their representatives, at Washington, and agreed to coördinate their operation and to merge their merely individual and competitive activities in an effort to produce a maximum of transportation efficiency. The executive committee, or Railway War Board, took the lead in this attempt at organization. It had no authority to command, but its suggestions were, in advance, secured a sympathetic hearing.

The Work of the Railway War Board

Between April, 1917, and January 1, 1918, American railroads thus operated under the guidance of a central committee of railroad men, much as did the English railroads during the entire period of the war, except for the important difference that the English committee had power, while the American committee had none. The work of the Railway War Board consisted in part of appeals to carriers and shippers to place more tons in a car and in a train, and to load and unload more quickly. The problem always before the Board was that of securing a maximum use of the country's railroad plant. Besides paying attention to loads and loading, the Board made plans for the handling of extraordinary movements, such as those incident to the building of cantonments or to the moving of troops, undertook to distribute cars, and made suggestions for routing calculated to secure direct movements of passengers and freight. Congress, meanwhile, afforded some assistance by making it a misdemeanor to obstruct, during the war, the orderly conduct of interstate or foreign commerce,[1] and by enlarging the powers of the Interstate Commerce Commission over car service—powers which, although not for the moment exercised, could be held in reserve and used if and when voluntary coöperation should fail.[2]

The same Act which penalized the obstruction of commerce during war time also empowered the President to direct that traffic which he considered essential to the national defense and security should have priority in transportation over railroads, water lines, or other means of communication. President Wilson exercised this authority in the appointment of Judge R. S. Lovett, one time chairman of the Board of Directors of the Southern Pacific Company, as Director of Priority, and Judge Lovett issued a number of orders between the date of his appointment on August 18, 1917, and the beginning of the period of federal operation at the end of December of the same year.

Reasons Which Made Direct Government Operation Desirable in the United States

While the efforts of the Railroad War Board during the latter part of 1917 undoubtedly produced good results, there were certain reasons which, as the months wore on, seemed to make more complete government control desirable. These reasons may be listed as follows:

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[1] 40 Stat. L. 272, 1917.

[2] 40 Stat. L. 101, 1917.

1. Private carriers operated in 1917 under several distinct statutes, which were, or might become, conflicting. Not only was there a possibility of conflict between the priority orders of Judge Lovett and the authority which the Interstate Commerce Commission possessed over the distribution of railway cars, but preference orders were issued by the Army and Navy Departments, as well as by Judge Lovett, for the carriage of a very large tonnage of materials and supplies of all kinds. This, with the insistence of the food and fuel departments of the federal government on the expeditious handling of traffic in which they were interested, caused the carriers considerable embarrassment. And finally, the carriers were all subject to a federal law of 1890 forbidding combinations in restraint of trade, and were uncertain how far the exigencies of war would excuse them in the joint regulation of the movement of passengers and freight.

2. There was some reason to believe that the private interests of individual carriers were still hindering the operation of the railroads of the country as a single continental railway system. Nor could these interests be entirely disregarded until the federal government took steps to equalize the unequal burdens which complete subordination to the public interest would have imposed upon different railway lines.

3. The relations between carriers and their employees were becoming strained. Many of the best employees were being attracted from railroad service by the high wage level in outside employment, and the rest were restive under the pressure of an advancing price level which reduced the purchasing power of the incomes which they enjoyed.

4. The railroads were not able to sell securities to finance necessary additions to their plant and equipment, nor could they count upon being able to buy supplies even when the money was in hand.

It is not necessary to discuss the concrete evidences of the difficulties with which the private railroads of the United States were confronted in the latter half of the year 1917. Enough to say that they were sufficient to lead to President Wilson's proclamation of December 28, 1917, and to the beginning of a period of federal operation, to the consideration of which we will now turn.

Beginning of Federal Operation

Federal operation of the railroads of the United States began at twelve o'clock noon on the 28th day of December, 1917. According to an Act of Congress passed March 21, 1918, it was to continue during the war and for a reasonable time thereafter, not exceeding one year and nine months following the date of the proclamation by the President of the exchange of ratifications of the treaty of peace. Federal control actually terminated upon March 1, 1920, by action of the President under his discretionary authority. Government operation lasted, therefore, for twenty-six months. The important features of this experience upon the financial side will be presented in this chapter under four heads. Operating policies of the administration will be discussed in the chapter that follows.

Mileage Operated by the Government of the United States

The presidential proclamation of December announced the assumption of control over "each and every system of transportation and the appurtenances thereof located wholly or in part within the boundaries of the continental United States and consisting of railroads, and owned or controlled systems of coastwise and inland transportation engaged in general transportation, whether operated by steam or by electric power, including also terminals, terminal companies, and terminal associations, sleeping and parlor cars, private cars and private car lines, elevators, warehouses, telegraph and telephone lines, and all other equipment and appurtenances commonly used upon or operated as a part of such rail or combined rail and water systems of transportation."

The proclamation excluded street electric passenger railways, including interurbans, by special mention, doubtless upon the ground that street railways were of local interest only. For the same reason the federal government never operated the plants of some 855 short-line-railroad companies, although these lines were technically taken over at the beginning and had, later, to be formally relinquished. The total mileage of main-line railroads taken over, excluding the so-called short lines, was 241,194 miles.[1] The total mileage of steam railroads in the United States, on December 31, 1917, was 253,626 miles.

The property other than railroad property taken over included the Pullman Company car lines; some 25 coastwise and inland steamship lines; docks, wharves and floating equipment used in harbors by railroads; private cars; grain elevators; and three waterworks companies.

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[1] Report of Director-General of Railroads for the calendar year ending December 31, 1922.

Nature of the Relations of the Government of the United States to Private Railroads After the Beginning of Federal Operation

Federal control in the United States was an operating control, which entailed no change in the ownership of the country's railroad system. In this it followed foreign practice, although the government in this country departed from the precedent set in England, in taking direct and active responsibility for the details of operation, as well as for the formulation of general policies.

What happened was that the President appointed a Director-General, who in turn appointed subordinates who were responsible for the daily use and maintenance of the railroad plant. The line of authority descended without a break from the Director-General to the track laborer upon the line. It goes without saying, of course, that the Director-General adopted for the most part the peace-time personnel of the private railroad companies as his own, making changes only as the public interest seemed to require. Nevertheless, he conceived his position as that of an active executive, not as that of a coördinating and policy-forming agency. The Director-General was assisted by a considerable central administrative organization, located at Washington, D. C. The task of direct operation was intrusted to regional directors, originally three in number—one for the East, one for the West, and one for the South—and beneath these to district directors, in charge of subdivisions of the regions, and to federal managers, who corresponded roughly to the presidents of the private railroad companies.

It should be added here that the corporate organization of the private railroads remained intact during federal control, with a skeleton staff retained to protect the proprietary interests of the stockholders in the railroad plant. This staff had no authority with respect to operation, and it was paid by the stockholders, not from current railroad revenues.

The Railroad Contract

The financial arrangements between the federal government and the private railroad corporations and their stockholders during the period of federal control were governed by an Act of Congress dated

March 21, 1918. Acting under authority conferred by this legislation, the Railroad Administration offered to conclude contracts with the owners of the transportation properties which it was operating, defining its obligations with precision. These contracts covered 313 out of 532 separate properties taken over, and settlements with the balance were eventually made in substantial accord with the principles herein laid down. The text of this important document will, therefore, be explained with care.

The main features of the standard contract executed by the Railroad Administration during federal management were as follows:

1. Beginning January 1, 1918, revenues of the properties operated by the Director-General were to be retained by the United States, and all expenses incident to the possession, use, and operation of the plant taken over during federal control were to be paid by the Director-General, except expenses which the company signing the contract agreed to bear. Operating revenues were not, however, currently covered into the Treasury of the United States, but remained in the same hands and were paid out in the same way as before, subject to periodical accountings, at which times the balances of revenues over expenditures were covered into the Treasury to the credit of a revolving fund established by the Act. When revenues were insufficient to meet disbursements, the deficits were paid out of the same revolving fund.

2. The Director-General engaged to return the property to the company which owned it in substantially as good repair, and in substantially as complete equipment, as it was on January 1, 1918.

3. Additions and betterments might be made to the operated property during federal management, but the cost thereof was to be chargeable to the owners of the roads, and either deducted from the payments due the owners by the United States Government or financed by the owners in some other way.

4. The Director-General undertook to pay a stipulated compensation for the use of the property taken over. This compensation was individually determined for each railroad affected, but its amount, as will be presently explained, was based in all cases upon certain accepted principles.

These four provisions were not, of course, the entire content of the standard contract, but they express the substance of the arrangement entered into with sufficient completeness for our present purpose.

Basis of Compensation

The most important clauses of the standard contract were those determining the rental to be paid for the use of the railroads taken by the government. It will be recalled that the English Government, under similar circumstances, agreed to guarantee the owners of English railroads a return equal to the aggregate net receipts for the year 1913, which was the year prior to England's entrance into the war. No better general procedure suggested itself either to the President or to Congress, although some changes were made in the application of the English precedent.

The average income per mile of railways in the United States, after deduction of operating expenses and taxes, had been, for stated years, as follows:

AVERAGE INCOME PER MILE OPERATED, ADJUSTED TO ELIMINATE EFFECT DUE TO DUPLICATION ON ACCOUNT OF TRACKAGE

Year	Average income
1905	$3,001
1906	3,330
1907	3,470
1908	2,952
1909	3,276
1910	3,644
1911	3,304
1912	3,190
1913	3,584
1914	3,006
1915	2,972
1916	4,247
1917	4,851

Inasmuch as the earnings of the last peace year—1917—seemed too high to serve as a reasonable basis for compensation, Congress adopted the average of the three years ending June 30, 1917, in their stead. This included two good years and one year of light railway earnings. It was a liberal basis for payment, but the government at the time wished to assure itself of cordial support in all directions, and was disposed to be generous in this as in other negotiations.

Earnings Compared with Rental Payments

The gross rental which the United States Government paid for the use of private transportation facilities during war time was as follows:

1918 (12 months)	$ 965,788,896.97
1919 (12 months)	963,401,158.29
1920 (2 months)	158,133,538.71
Total	$2,087,323,593.97

The cost to the government of this rental consisted of the difference between $2,087,323,593.97 and the net revenues earned by the transportation plant taken over. The earned revenues were $1,276,782,307.75, and the cost was therefore $810,541,286.22. This cost was distributed among different types of facilities as follows:

Railroads	$788,656,703.38
Water lines	14,003,659.44
Electric lines	3,971,442.60
Car companies	3,425,188.24
Grain elevators	434,654.35
Water works	49,638.21
Total	$810,541,286.22

Undermaintenance

In addition to the net cost which resulted from the failure of the properties operated by the Director-General to earn their rentals, the government was eventually required to pay considerable sums to the private owners of these properties on account of undermaintenance. It is true that the Railroad Administration kept some of its lines and equipment in first-class condition; but on the whole, the rise in prices of labor and materials, the scarcity of materials of certain kinds, the use of equipment for purposes for which it was not intended, as when light wooden cars were put in service in trains mainly composed of steel-frame cars, and, in general, the exigencies of war-time operation, resulted in a sensible and uncompensated deterioration in railroad plant. The amount allowed for undermaintenance in the final settlement between government and private carriers was $164,458,615.84, a sum further raised on account of depreciation and retirements to a total of $185,308,306.08.

Still other expenses were the result of expenditures on inland waterways operated by the Railroad Administration, deficits of the American Railway Express that the Administration assumed, and advances in the price of supplies which had been taken over at the beginning of federal control and had later to be replaced in kind.

Summary of Cost of Federal Operation

The official statement, to December 31, 1924, of the cost to the United States of the twenty-six months of federal operation of transportation systems is as follows:

STATEMENT OF ESTIMATED COST TO DECEMBER 31, 1924, TO THE UNITED STATES RAILROAD ADMINISTRATION OF FEDERAL OPERATION OF TRANSPORTATION SYSTEMS [1]

Excess of rental paid to carriers by United States Railroad Administration over income from operations of transportation systems	$ 810,541,286.22
Expenditures on inland waterways, including loss from operations. New York Canal, New Jersey Canal, Mississippi-Warrior waterways	18,303,093.08
Deficit from operations of American Railway Express Company	36,047,460.14
Settlements with short line carriers	732,240.11
Loss on account of replacement in kind at end of Federal control of materials and supplies taken over from carriers at beginning of Federal operation because of increases in prices	101,080,602.36
Administrative expenses from January 1, 1918, to December 31, 1924	32,663,094.65
Special claims of carriers, maintenance, depreciation, retirements, etc.	185,308,306.08
Miscellaneous charges	12,008,361.16
Total	$1,196,684,443.80
Less net interest collections on bank balances, securities, and settlements with carriers, in excess of interest payments	73,184,443.80
Net estimated cost to the United States Railroad Administration	$1,123,500,000.00

The estimated cost of additional settlements with short-line railroads, made public after the above statement was prepared, raises the total given by $15,000,000 to an aggregate of $1,138,500,000.

It will be observed that this statement takes no account of additions and betterments made by the Railroad Administration, which one would expect to find as a credit in the settlements between the Administration and private carriers. Expenditures for this purpose were, in fact, considerable. In addition to the $1,138,500,000 spent during twenty-six months for rentals, undermaintenance, and similar purposes, the Director-General invested no less than $1,157,540,178.65 in improvements and additions to the line and equipment of carriers subject to his control. Of this sum, however, the private carriers had repaid $603,281,428.65 in cash or its equivalent by December 31, 1924, and for the balance the Railroad Administration held serial equipment notes, payable between January 15, 1921, and January 15, 1935, or other carrier obligations maturing not later than March 1, 1930. The item of additions and betterments is therefore eliminated from the statement of debits and credits growing out of federal control.

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[1] Report of Director-General of Railroads, 1924, Exhibit 13. This cost was in addition to expense incurred for transportation of government supplies, etc., for which the government paid at ordinary rates.

Extension of Government Guaranty

While the official estimate of the cost of federal control to the United States taxpayer stands at $1,138,500,000 as of December 31, 1924, there is one additional item of expense which should properly be included in this calculation. In 1920, when the United States Government was about to return the transportation facilities which it had been operating to private management, Congress authorized a six months' extension of what may be called the guaranty provisions of the Act of 1918.

Under Section 209 of the Transportation Act of 1920, Congress agreed to guarantee to any carrier which chose to enter into an appropriate agreement, an operating income for six months which should not be less than one half of the average annual operating income of such carrier for the three years ending June 30, 1917. Congress stipulated that agreeing carriers who earned more than the guaranteed amount during the six months in question should turn the excess into the federal treasury, but stood ready to make good any deficits which might occur.[1]

The offer contained in the Transportation Act of 1920 was based upon the theory that private carriers were entitled to government support for a limited time during the difficult period of reconstruction. Railroad expenses had reached a high level under federal management, and were likely to be further increased as a result of pending wage controversies; railroad rates had not been correspondingly increased, and time was required to make necessary adjustments. There was some basis for this point of view, but the proposal proved exceedingly expensive to the government.

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[1] This offer was extended both to carriers entitled to "just compensation" under the Act of 1918 and to those not covered by this legislation. The details of the proposed agreement differed somewhat for different classes of carriers, but the general effect was as stated in the text.

According to reports filed with the Interstate Commerce Commission, railway monthly operating revenues and expenses for 1919 and 1920 were as follows:

RAILWAY OPERATING REVENUES, RAILWAY OPERATING EXPENSES, AND NET RAILWAY OPERATING INCOME, 1919 AND 1920, CLASS I STEAM ROADS, INCLUDING SWITCHING AND TERMINAL COMPANIES [1]

1919	Railway operating revenues	Railway operating expenses	Net railway operating income
January	$ 397,231,510	$ 361,144,665	$ 18,442,102
February	352,385,229	325,147,641	9,788,655
March	377,383,701	347,877,435	10,661,152
April	389,487,271	344,770,607	26,002,383
May	413,945,449	355,691,811	39,340,216
June	426,089,950	356,407,447	52,138,463
July	455,280,142	358,891,812	77,229,492
August	471,714,375	359,149,584	92,508,715
September	498,611,917	399,904,137	77,648,722
October	509,760,115	405,879,309	76,294,127
November	438,105,217	389,890,950	22,025,807
December	453,386,816	414,514,029	13,704,977
	$5,184,064,221	$4,419,441,949	$516,290,090
1920			
January	$ 500,839,203	$ 416,418,194	$ 59,639,698
February	424,591,296	416,458,368	*16,851,801*[2]
March	460,187,437	420,450,441	14,772,906
April	402,281,913	400,419,462	*23,743,666*[2]
May	457,559,065	437,829,758	*5,429,769*[2]
June	494,713,929	480,500,292	*15,240,366*[2]
July	529,149,754	514,254,089	*12,053,290*[2]
August	555,522,389	682,315,188	*158,582,570*[2]
September	618,925,580	509,720,494	79,675,646
October	641,827,108	526,543,604	86,641,023
November	592,054,192	513,614,308	50,964,905
December	550,580,330	510,769,252	3,302,304
	$6,225,417,245	$5,830,326,686	$ 58,151,863

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[1] Annual report of the Interstate Commerce Commission, 1922, pp. 104–105. The totals include certain corrections not appearing in monthly figures. It should be observed that net railway operating income in column 3 is not the difference between railway operating revenues and railway operating expenses, but is this figure subject to certain deductions, of which railway tax accruals is the largest. Both operating revenues and net railway operating income for January, 1920, are increased by the inclusion of approximately $50,000,000 back railway-mail pay.

[2] Deficit.

The figures in the preceding table show that Class I railroads in the United States earned a substantial net operating income for every month but one between January, 1919, and March, 1920, inclusive, but that there was not a month from April to August in 1920 when operating expenses did not exceed operating revenues. During 1918 the average monthly net operating railroad income had been $57,759,264; during 1919, $43,024,174; but during the six months from March 1 to September 1, 1920, there was an average monthly deficit of $33,379,459.[1]

Under the extended guaranty clauses of the Act of 1920, the United States Government had not only to make their deficit good for carriers which took advantage of the government offer, but it had also to provide an additional sum sufficient to bring these earnings up to the level of the average of the three years ending June 30, 1917. The standard return had amounted during the period of federal control to an average of $78,000,000 per month. It followed that the federal government exposed itself to the necessity of a payment which might well exceed $111,000,000 for one month, or $666,000,000 in all.

Fortunately, not all carriers accepted the extended guaranty, and the Interstate Commerce Commission expects that this fact, together with adjustments made in the course of accountings which have taken or will take place, will reduce the government liability to $536,000,000. If this estimate proves correct, the final burden to taxpayers in the United States as a result of federal management will be this sum added to $1,138,500,000, or a total of $1,674,500,000.

Cost of Government Operation in France, 1914-21

It is difficult to compare the results of war-time operation of railroads in the United States with those in foreign countries, because of the fluctuations in the value of currencies, the differences in conditions, and because, also, the periods of time involved were longer in Europe than they were in the United States.

It may be said, nevertheless, that during 1913, the last year before the war, the five great private railroad systems in France earned approximately 4,000,000 francs after payment of operating expenses and all capital charges. The state railroad system in France reported a deficit of 84,000,000 francs, leaving a balance of 80,000,000 francs upon the wrong side of the ledger for all the French railroads combined.

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[1] Approximately $143,000,000 of the deficit reported for the months of June, July, and August, 1920, consisted of back pay awarded under Decision No. 2 of the United States Railroad Labor Board increasing railroad wages. A final charge of $3,000,000 on the same account was made against the revenues of September, 1920.

Between 1914 and 1919, the accumulated deficit upon these same six systems was as follows:

DEFICIT ACCUMULATED FROM 1914 TO 1919 BY THE SIX FRENCH RAILROAD SYSTEMS [1]

System	Deficit (francs)
Northern	832,100,000
Eastern	466,100,000
Orleans	327,300,000
Paris-Lyon-Mediterranean	743,400,000
Midi	242,700,000
Total	2,611,600,000
State	1,014,000,000
Total	3,625,600,000

This total deficit of 3,625,600,000 francs was increased by 2,997,000,000 francs in 1920 and, further, by 2,010,000,000 francs in 1921,[2] making a total deficit of 8,632,600,000 francs between the outbreak of the war and the passage of the French reconstruction legislation of October 29, 1921. The burden of covering this deficit either has been or will be borne by the general French budget.

Cost of Government Operation in the United Kingdom, 1914-20

In the United Kingdom, it will be recalled that the government undertook at the beginning of the war to pay to the railroad companies the sum by which the aggregate net receipts of the railways, for the period during which the government was in possession of them, fell short of the aggregate net receipts of these same systems for the year 1913. The period of government guaranty extended from August 5, 1914, to August 15, 1921. During this period the government became indebted to the railway companies for the sums on the following page.

These payments included not only compensation for decline in earnings, but also allowances on account of undermaintenance and other claims allowed in final settlement. They also included an

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[1] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Transportation Division, "Analysis of French railroad situation," by W. C. Huntington. Trade Information Bulletin No. 17, April 15, 1922.

[2] *Railway Age*, March 22, 1924.

Period	Amount
August 5, 1914, to December 31, 1915	£ 15,946,839
January 1 to December 31, 1916	14,039,674
January 1 to December 31, 1917	24,075,768
January 1 to December 31, 1918	41,251,326
January 1 to December 31, 1919	35,736,000
January 1 to December 31, 1920	43,089,000
January 1 to December 31, 1921	53,211,000
January 1 to December 31, 1922 (due and payable December 31, 1922)	30,000,000
Total	£257,349,607

undetermined but large amount for military and naval transport, for, unlike the governments of France and of the United States, the British Government paid its railroads nothing for such services as long as they operated under a guaranty. The appropriation in 1922 and a part of that in 1921 were, of course, for government obligations incurred on account of earlier operations.[1]

Information is not available which will make possible similar statements for the railroads of other European countries.

It is evident that government railroad management cost the taxpayer heavily in England and in France as well as in the United States, but the figures given show also that this cost was less in either England or France, for a period of approximately seven years, than it was in the United States for a period of thirty-two months. This difference would be increased if account were taken of the fluctuations in the value of money in the various countries. On the other hand, it must be remembered that the railway mileage in England in 1921 was only 23,723 miles, and in France only 25,000 miles, as against 254,000 miles in the United States, and that railway earnings in these countries, while much greater per mile than in the United States, were still sensibly inferior in the aggregate to the sums with which our federal administration had to deal.

Conclusion

Before leaving the subject, one final observation must be made. Neither in Europe nor in the United States should the efficiency of government operation be judged by the success or failure of government systems to earn profits during the war. This is partly because private railroad managements would have had to contend with the same fundamental difficulties which made government operation expensive. But it is also because profit-earning is a matter of policy, intimately connected with the question of railroad rates. Had rates been raised more promptly here and abroad, it is probable that English, French, and American railroads alike, even under government control, could have earned their operating expenses and capital charges during the war. Instead of raising rates, governments in the three countries preferred to place part of the burden of railroad operation between 1914 and 1921 upon the general taxpayer rather than to collect the entire necessary revenue from passengers and shippers. It is possible, though far from certain, that this decision was a mistaken one; but it should be discussed by itself as a problem of policy, and not confused with the question of the effectiveness of government control from a technical or commercial point of view.

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[1] United States Department of Commerce, Bureau of Foreign and Domestic Commerce, "The reorganization of railways in Great Britain," by H. B. Allin-Smith. Trade Information Bulletin No. 79, January 10, 1923; Pratt, *British Railways and the Great War*, chap. xi.

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CHAPTER XXVIII

FEDERAL RAILROAD OPERATION IN THE UNITED STATES, 1918-20

Character of Traffic, 1918-19

The years 1918 and 1919, when carriers were being managed by the federal government, were not years when the movement of either passengers or freight in the United States reached extraordinary dimensions. Passenger traffic grew steadily, although in no great amount, while freight traffic first increased in 1918 and then fell off the following year to a figure below even that for 1916.

Nor was there any great change in the character of commodities transported while the federal government operated the railroads of the country. The ten commodities which contributed the greatest tonnage to railway traffic in 1917 were coal and coke, iron, stone and sand, grain and flour, fruits and vegetables, lumber, ore, petroleum, cement, and live-stock. Of these, stone, sand, and cement may be neglected, as the articles in these classes are of low value and travel only short distances. Of the other commodities mentioned, the tonnage of grain, anthracite coal, coke, iron and steel, ore, and lumber was somewhat less in the two years 1918-19 than in the preceding years 1916-17; while the tonnage of flour, fruits and vegetables, petroleum, bituminous coal, meats and meat products, including live-stock, somewhat increased. While these changes perhaps somewhat altered conditions of operation, they were not of a radical character, and with respect to traffic handled, the Railroad Administration faced a situation which was much more nearly normal than one would, at first thought, expect.

While, however, the volume and character of railroad traffic in the United States during the war was not radically different from the volume and character in time of peace, it is clear enough that the Administration functioned under unusual strain in some respects. It was, for instance, more than usually important to operate the railroad system of the country without interruption from strikes or other causes, for temporary cessation of transportation meant temporary suspension of military effort as well as the inconvenience which breakdown of the railway system would at all times create. It was also important to determine the kinds of business which should be given preference. Nor were questions of rates, fares, or of terminal operating policy without importance. These various types of problems will be briefly touched upon in the following pages.

Government Labor Policies

Overshadowing all other of the government's operating policies were those relating to labor. The total wage bill of Class I American railroads in 1917 amounted to $1,739,482,142, or more than 60 per cent of the railroad expenditure for that year. The large amount of this outlay, and the fact that the efficiency with which the railroad system was to be operated depended upon the intelligence and the morale of the employees more than upon any other single factor, explains and justifies the attention which was paid to railroad wages and working conditions.

Generally speaking, the pay of railroad employees in 1917 was low. The Lane Commission, presently to be referred to, spoke on this point as follows:

> "It has been a somewhat popular impression that railroad employees were among the most highly paid workers. But figures gathered from the railroads disposed of this belief. Fifty-one per cent of all employees during December, 1917, received $75 per month or less, and eighty per cent received $100 per month or less. Even among the locomotive engineers, commonly spoken of as highly paid, a preponderating number received less than $170 per month, and this compensation they have attained by the most compact and complete organization, handled with a full appreciation of all strategic values. Between the grades receiving from $150 to $250 per month, there is included less than three per cent of all the employees (excluding officials) and these aggregate less than sixty thousand men out of a grand total of two million."

Prior to 1917 controversies between employees and railroad managements, which threatened a nation-wide strike of railroad enginemen, firemen, conductors, brakemen, and other train employees, had been momentarily settled by the Adamson Law of 1916, establishing eight hours as the basis for a day's pay, although not prohibiting a longer working day.[1]

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[1] An official commission reported in 1918 that the effect of this act had been to increase wages in road freight service about 15, and in yard service about 25 per cent. Passenger service was little affected.

Report of the Lane Commission

In 1917 there was no comprehensive revision of railroad wages, although partial advances continued to take place upon a considerable scale. In 1918, however, as one of the first acts of his administration, Mr. McAdoo appointed a Railroad Wage Commission of four men to investigate the whole question of compensation to persons in railroad service.

This commission, known as the Lane Commission, from its chairman, Franklin K. Lane, reported in April, 1918. It found that the cost of living had so advanced that a man who received $85 a month on January 1, 1916, needed a 40 per cent addition to his wage on April 30, 1918, in order to give him the same living that he had before. For smaller incomes the required increase was somewhat greater, for larger incomes somewhat less. The Commission, therefore, recommended a schedule which began with a flat increase of $20 per month for employees receiving under $46 monthly. Men and women receiving from $46.01 to $50 were to be advanced 43 per cent, and from this point on the various wage classes in railroad service were to receive increases in steadily decreasing proportions, until the level of $250 per month was reached, beyond which point no increase was given.

RECOMMENDED SCALE[1]

To the monthly rate of pay of men receiving, in December, 1915, the amounts named in this column	Add the per cent named in this column	Equivalent to the amounts named in this column	Making new rate per month as shown in this column
Under $ 46.00	.....	$20.00	....
$ 46.01 to 47.00	43.00	20.21	$ 67.21
60.01 to 61.00	41.00	25.01	86.01
80.01 to 81.00	40.44	32.75	113.75
100.01 to 101.00	31.29	31.60	132.60
150.01 to 151.00	15.96	24.10	175.10
200.01 to 201.00	8.26	16.60	217.60
249 01 to 250.00	.....	.....	250.00

This scale was promptly approved by the Director-General and made effective, with unimportant variations, as of January 1, 1918. Advances in wages received by an employee after the last day of

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[1] The table printed in the text presents extracts only from the recommended scale. The actual scale of course provided for all wage groups up to those receiving $250 per month.

December, 1915, were deducted from the increases awarded in 1918. On the other hand, the new rates were based upon the eight-hour day, so that employees in any branch of the service who worked longer than eight hours were entitled to overtime.

Cost of Increased Wage Scale

It has been estimated that the increases in wages under General Order No. 27 (Lane award) cost the Railroad Administration $360,000,000. Subsequent advances to 1920 resulted in further additional payments, estimated as follows:

ESTIMATED ANNUAL INCREASE IN PAY ROLLS CHARGEABLE TO OPERATING EXPENSES ON ACCOUNT OF GENERAL ORDER 27 AND SUPPLEMENTS THERETO [1]

	Employees affected	Effective date	Estimated annual increase in pay roll chargeable to operating expenses
General Order 27 (substantially recommendation of Lane Commission)	All employees receiving less than $250 per month	Jan. 1, 1918	$360,000,000
Supplement 4	Shop employees	Jan. 1, 1918	209,000,000
Supplements 7 and 8	Maintenance of way employees and clerks	Sept. 1, 1918	190,000,000
Supplement 13	Agents and operators	Oct. 1, 1918	25,000,000
Supplements 14, 17 and 18	Policemen, dining and sleeping car employees	Jan. 1, 1919	8,000,000
Supplements 15 and 16	Enginemen and trainmen	Jan. 1, 1919	60,000,000
Increase in pay under equalization adjustment effective May 1, 1919	Shop employees	May 1, 1919	50,000,000

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[1] Tabulation prepared by the Railroad Administration for the Subcommittee of the House Committee on Appropriations, April 12, 1920.

Time and one-half for overtime allowed	Enginemen and trainmen in road freight service	Dec. 1, 1919	38,000,000
Time and one-half for overtime and other adjustments in pay	Maintenance of way employees Clerks	Dec. 16, 1919 Jan, 1, 1920	25,000,000
Total			$965,000,000

The increase in pay rolls which resulted from changes in the rates of railroad pay between January 1, 1918, and January 1, 1920, is shown by this table to have been in the vicinity of one billion dollars. Taken in connection with the adoption of national agreements governing rules and working conditions for railroad labor, the total increase in the pay roll on the basis of employment in 1920 was later estimated by the Interstate Commerce Commission to have been about $1,400,000,000.

Wages and the Cost of Living

Writing in 1928, it is possible to speak as to the relations between wages and cost of living during the war period with more abundant information than the Administration possessed in 1918. The following table, compiled from reports of the Interstate Commerce Commission and from those of the United States Bureau of Labor Statistics, shows the changes in annual and hourly compensation to railway employees from 1916 to 1922, inclusive:

NUMBER, SERVICE, AND COMPENSATION OF EMPLOYEES, INCLUDING GENERAL AND DIVISION OFFICERS—CLASS I ROADS, 1916–22 [1]

Year ended June 30	Average number of employees	Total hours worked	Total compensation	Average compensation per hour	Average compensation per employee
1916.....	1,599,158	4,957,654,532	$1,366,100,519	$ .276	$ 854
Year ended Dec. 31					
1916.....	1,647,097	5,189,790,716	1,468,576,394	.283	892
1917.....	1,732,876	5,437,976,803	1,739,482,142	.320	1,004
1918.....	1,841,575	5,701,417,385	2,613,813,351	.458	1,419
1919.....	1,913,422	5,032,493,422	2,843,128,432	.565	1,486
1920.....	2,022,832	5,466,740,533	3,681,801,193	.676	1,820
1921.....	1,659,513	4,147,318,574	2,765,218,079	.667	1,666
1922.....	1,626,834	4,311,097,145	2,640,817,005	.613	1,623

[1] Interstate Commerce Commission, "Annual Report on the Statistics of Railways in the United States, 1922," p. xxi.

The rather striking table just presented shows that while the number of railway employees and their compensation steadily increased between 1918 and 1920, the total number of hours worked remained substantially unchanged. The not unnatural result was an extraordinary increase in hourly pay. This was the outcome of the double attempt to meet the increased cost of living of the railway worker referred to in the Lane report, and to introduce into railway service a reasonably short working day.

If we neglect the change in hourly rates, and confine ourselves to wages per year or per man, relative figures still reflect the advances of the Lane award, as well as other changes both before and after the date of that report. A comparison of annual wage changes in different years with changes in retail prices gives the following results:

AVERAGE ANNUAL COMPENSATION TO EMPLOYEES OF CLASS I RAILROADS, 1913–22, COMPARED WITH INDEX NUMBER OF RETAIL PRICES[1]

	Average annual compensation		Retail prices
Year ended June 30	Actual	Relative (1913 = 100)	Relative (1913 = 100)
1913	$ 760.98	100.0	100.0
1914	815.43	107.1	102.4
1915	830.45	109.1	101.3
Year ended Dec. 31			
1916	891.62	117.2	113.7
1917	1,003.81	131.4	146.4
1918	1,419.34	186.5	168.3
1919	1,485.89	195.2	185.9
1920	1,820.12	239.1	203.4
1921	1,666.28	218.9	153.3
1922	1,623.29	213.3	141.6

This table shows that, generally speaking, the wages of railroad men kept pace with advancing prices from 1913 to 1916, inclusive, but that in 1917 a lag occurred, which was corrected by the action of the Interstate Commerce Commission the following year. After 1917 wages reached and held a higher relative position than did prices, so that the railroad workers benefited in the long run by conditions growing out of the war.

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[1] Price figures from *Monthly Labor Review*, December, 1924, p. 14.

Wage Tribunals

One of the incidental recommendations of the Lane Commission was that the government should establish permanent wage tribunals to investigate and adjust inequalities which would ensue from the general increase in wages which it recommended. For this purpose, as well as to consider working conditions and other matters affecting wages which he might refer to it, or which railroad employees might desire to have considered, the Director-General set up a Board of Railroad Wages and Working Conditions, composed of three representatives of railroad labor and three representatives of railroad management, which functioned in an advisory capacity.[1]

Finally, the government created a series of so-called Adjustment Boards. Of the three boards of this type organized in 1918, Board No. 1 was given authority to render decisions in disputes affecting locomotive engineers, conductors, trainmen, and firemen; Board No. 2 concerned itself with the various shop crafts, including boilermakers, blacksmiths, sheet-metal workers, electrical workers, and the like; and Board No. 3 represented telegraphers, switchmen, clerks, and maintenance-of-way employees.

Adjustment Board No. 2 consisted of twelve members, Boards Nos. 1 and 3 of eight members each. Half of the members in each case were selected and compensated by the railroads, and half were selected and compensated by the employees, acting through their national unions. The Boards were to consider all controversies growing out of the interpretation or application of wage schedules or agreements which were not promptly adjusted by the officials and the employees on any one of the railroads operated by the government. This included the settlement of personal grievances. They did not, of course, supersede the usual machinery for the adjustment of difficulties which existed upon individual railroad systems, but they functioned as courts of appeal, in which both parties were equally represented and which were equipped to render final decisions by majority vote.

It is clear that the organization of the Adjustment Boards, and, more particularly, the determination of employee representation upon these boards by the craft organizations in the railway industry, was a thorough-going recognition of union responsibility and control on the part of the Director-General. Unorganized employees, or even employees who did not belong to the enumerated unions, had no voice in choosing the membership of the Adjustment Boards, although the government did appoint an Assistant Director of the Division of Labor of the Railroad Administration, whose special duty it was to investigate and adjust their peculiar difficulties. Union control was, moreover, national, not local. Adjustment Board No. 1 represented all the enginemen, Board No. 2 all the shopmen, and Board No. 3 all the switchmen of the country, without regard to geographical position, and the decisions of these organizations had corresponding national importance. The features of the arrangement mentioned were highly acceptable to the railway unions, and were sought to be perpetuated after the termination of federal control.

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[1] United States Railroad Administration, General Order No. 27, May 25, 1918.

Price Changes and Their Relation to Railroad Income

A complement to the Administration's problem with respect to labor is to be found in its policy regarding rates.

The problem here was to revise railway freight and passenger rates so as to continue the railways upon a self-supporting basis, in spite of the increase in wages that has just been described, and the increases in prices which followed the outbreak of the World War.

Certain of the facts bearing upon this rate problem are presented in the following table, which summarizes the changes in wholesale prices which took place between 1915 and 1921, together with changes in average receipts per ton and per passenger mile, and average operating ratios upon railways in the United States:

RELATIVE CHANGES IN WHOLESALE PRICES, AVERAGE RECEIPTS PER TON AND PER PASSENGER MILE, AND IN OPERATING RATIOS, 1915–21

(1915 = 100 per cent)

Year ended Dec. 31	Wholesale prices (404 commodities)	Average revenue per ton per mile		Average revenue per passenger per mile		Operating Ratio
		Actual (Cents)	Relative	Actual (Cents)	Relative	
1915*	100.0	.735	100.0	1.991	100.0	70.65
1916	125.8	.719	97.9	2.051	103.0	65.73
1917	175.8	.728	99.1	2.097	105.3	70.48
1918	192.8	.862	117.3	2.421	121.6	81.39
1919	204.8	.987	134.3	2.548	128.0	85.11
1920	224.5	1.069	145.5	2.755	138.4	94.38
1921	145.3	1.294	176.1	3.093	155.3	82.71
1922	147.7	1.194	162.5	3.037	152.5	79.41
1923	152.5	1.132	154	3.026	152.0	77.83

* Year ending June 30. Figures taken from Interstate Commerce Commission Annual Report, 1924, and *Monthly Labor Review*, December, 1924.

Prices in 1915 were at approximately the same level as in 1913. In 1916 they advanced 26 per cent; in 1917, 1918, 1919, and 1920 they continued to rise with dramatic rapidity until in 1920 they were two and a quarter times the level of five years before. Meanwhile the average receipts per ton per mile of the railroad companies had risen only from .735 cent to 1.069 cents, or 45 per cent, and the average receipts per passenger per mile from 1.991 cents to 2.755 cents, or 38 per cent. The natural result was that operating expenses tended more and more to absorb the whole of railroad revenue, and the operating ratio rose from 70.65 to 94.38.

The Rate Advance of 1918

It was doubtless impossible in 1918 to forecast the full extent of the financial pressure to which railroads were to be subjected during the war, but it was already evident at this time that a quick and substantial raise in rates was necessary. This was accomplished by General Order No. 28.

The order relating to rates was dated May 25, 1918. It increased class rates generally 25 per cent. Commodity rates were, in most instances, also increased 25 per cent, although in some cases the advance was by specific amounts. Thus the rate on ore was advanced 30 cents per net ton of 2,000 pounds, that on cement 2 cents per 100 pounds, and that on coal amounts varying from 15 to 50 cents. Export and import rates were discontinued. Passenger fares were generally raised to the basis of 3 cents per mile (the average receipt per passenger mile in 1917 had been 2.097 cents). Reduced mileage rates were discontinued, and passengers traveling in sleeping and parlor cars were required to pay an additional passage charge of 16 2/3 per cent of the normal one-way fare, in addition to the payments required for the occupancy of a berth in a sleeping car or a seat in a parlor car. The effective increase in passenger charges was approximately 20 per cent.

On the whole, these increases were moderate, and less than in European countries. Indeed, they were probably less than the situation called for. Except for General Order No. 56, increasing express rates, there was no further general advance in rates during federal control. Whatever disarrangement in business was caused by General Order No. 28 was due less to the amount of the advance than to the fact that the increase produced by this order was a horizontal one, which necessarily established new relationships between rates and produced conditions of relative disadvantage to certain districts. The Administration provided for the modification of the rate structure to meet cases of hardship by the appointment of regional, district, and local freight traffic committees with minority shipper representation. These committees rendered good service in hearing and adjusting complaints, but, not unnaturally, they were unable to remedy all the maladjustments which occurred.

Priority Regulation

A third duty of the Railroad Administration was that of selecting, for preferential treatment, those movements of passengers or of freight which were important in the prosecution of the war. This was a matter in which coöperation between government agencies was necessary, as it was idle to give priority in transportation to an industry or to a plant which could obtain no coal from the Fuel Administration and no steel from the War Industries Board. The Railroad Administration, as one government department with headquarters at Washington, easily arranged for coöperation with other departments, and was able to do this in detail and promptly.

What happened with respect to preference was that the War Industries Board prepared a so-called "Preference List" during the war on which were placed the names of industries and of plants within those industries whose operation as a war measure was considered to be of exceptional importance. In addition, the Board published a general classification of purposes demanding preference treatment for the guidance of other governmental agencies. This classification named ships as the country's most pressing need, then aircraft and munitions, fuel, food, clothing, railroads, and public utilities, in the order mentioned. The United States Railroad Administration, in furnishing transportation, was guided by this classification and by the Preference List. Cases where plants found it difficult to get transportation, although they had been accorded priority in obtaining materials, were certified by the War Industries Board to the Railroad Administration, in order to prevent undue delay. These arrangements did much to systematize railroad service and to bring it in harmony with the general policies which the nation followed in carrying on the war.

The Director-General endeavored also to restrict passenger traffic as a part of his general program of selection, but met here the same obstinate resistance which foreign governments encountered in their attempts to achieve a similar result.

Finally, and apart from coöperating with other branches of the government in administering preference regulations, the Director-General properly felt it to be his duty to use the advantages of unified control of the nation's transportation system which he possessed to the fullest extent in promoting speed, certainty, and economy in railroad operation.

Curtailment of Traffic Expenditure

Inasmuch as the competitive activities of private railroad companies ceased with the beginning of federal control, there were certain types of expenses which the Administration could at once eliminate. One such sort of outlay was that for solicitation of freight. Thus the amount of advertising was reduced, the distribution of time tables cut down, so-called "off-line" or railroad agencies not located upon the line of road which they represented were abolished, and, in general, the expenditures for traffic purposes were made smaller.

The outlays of Class 1 carriers for traffic purposes during, before, and after, federal operation were as follows:

Calendar year	Total operating expense	Traffic expense[1]	Per cent traffic to total operating expense
1916	$2,357,398,412	$62,839,996	2.66
1917	2,829,325,123	64,985,070	2.29
1918	*3,971,870,043*	*48,620,134*	*1.22*
1919	*4,378,285,227*	*47,450,487*	*1.08*
1920	5,830,620,492	74,530,997	1.28
1921	4,562,668,302	84,183,424	1.84
1922	4,414,522,334	86,506,907	1.96

Traffic expenses fell from $65,000,000 in 1917 to $49,000,000 in 1918 and to $47,000,000 in 1919, at a time when total expenses were rapidly increasing. Not all of the saving through the elimination or reduction of traffic outlays was clear gain, for the carriers, in competing, had rendered services to shippers that were not continued under the new regime. Some real economy was, nevertheless, secured.

Other Economies in Operation

There was an operating as well as a traffic advantage in treating the railroads of the country as one instead of as 182 separate systems. It was, for instance, no longer necessary for railroad men to calculate and check divisions of revenue upon interline freight with the same care as formerly, as it made no difference to anybody how earnings were divided. The same was true of per-diem, mileage, and rental payments between roads for the use of equipment and the apportionment of claims for loss and damage. Analogous to these economies were those obtained by greater freedom of routing, by the joint use by several railoads of well-situated terminals, and by the better distribution of service through the elimination of duplications, as when several trains had formerly left the same terminal at the same time, bound for the same destination. The consolidation of ticket offices was still another act which promised some saving in expense without corresponding deterioration in service.

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[1] Traffic expenses include outlay for solicitation, advertising, industrial and immigration bureaus, the printing of tariffs, and salaries of officials who form part of the "traffic departments" of railroad companies.

It would require an excessively long enumeration to list all the matters through which the Director-General sought to utilize the advantages of unified control so as to promote economy in railroad operation. The followig items may, however, be mentioned in addition to those already described:

Pooling of freight cars.—Freight cars were distributed, after 1917, without regard to ownership, to the points where they were most needed. In December, 1917, the per cent of home cars to total cars on the line was 48. By February, 1920, this had fallen to 21.5 per cent, which meant that, on the average, only one out of every five cars upon the line of a railroad in the United States belonged to the company which was operating it. By December, 1926, the percentage of home cars to total cars on line had again risen, to 59.5 per cent.

Pooling of locomotives.—Engines as well as cars were shifted from road to road as needed.

Joint use of tracks.—In some cases two single-track lines, formerly operating as competing carriers, were now used as one double-track system. The comparable joint use of terminals has already been mentioned.

Standardizing equipment.—Unified government control made it possible to reduce somewhat the number of types of engines and cars used—a policy which made for economy in production and greater interchangeability in use.

Standardizing statistics.—Effort was directed during the war to the improvement of railroad operating statistics, and some interesting results were obtained.

Probably the total results of these various economies were slight, because American railroads were already too well organized before the war to permit the Director-General to effect great savings by sudden changes in operating method, and because, after all, many of the improvements mentioned applied only to matters of detail. The accomplishments of the Administration can be better measured by the utilization of railroad track, equipment, and personnel during the war than by the enumeration of cases of standardization or of consolidation, and upon this subject, accordingly, a few words will be said.

Utilization of Track

The average freight and passenger train mileage per mile of track from 1915 to 1922 is stated in the following table:

FREIGHT AND PASSENGER TRAIN MILES PER MILE OF TRACK,[1] CLASS I CARRIERS, 1915–22

Year ended June 30	Freight-train miles per mile of track	Passenger-train miles per miles of track
1915	1,504	1,561
1916	1,641	1,572
Year ended Dec. 31		
1916	1,696	1,582
1917	1,712	1,561
1918	*1,654*	*1,422*
1919	*1,464*	*1,438*
1920	1,610	1,488
1921	1,346	1,463
1922	1,399	1,416

The figures show that the utilization of track during the war years 1918 and 1919 was slightly below normal. The decline was more marked for passengers than for freight, but it is evident in each category.

Utilization of Personel

The reader is referred to earlier pages in this chapter for statistics of the number of employees of Class I carriers and of the total number of hours worked in different years. What the output was per employee or per employee-hour can best be determined by relating these statistics to other figures showing traffic. The following table attempts something of this sort by the use of index numbers, and also by the calculation of output in so-called traffic units, made up by addition of ton and passenger miles to obtain a rough measure of transportation service in the aggregate:

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[1] Interstate Commerce Commission, "Annual report on the statistics of railways of the United States, 1921, 1922."

COMPARISON OF CHANGES IN THE NUMBER OF EMPLOYEES, HOURS WORKED, TON AND PASSENGER MILES, AND TRAFFIC UNITS PER EMPLOYEE AND PER HOUR [1]

Year ended Dec. 31	Average number of employees (1916 = 100)	Ton miles (1916 = 100)	Passenger miles (1916 = 100)	Traffic units	
				Per employee	Per employee hour
1916.......	100	100	100	261,643	83.04
1917.......	105.2	108.6	114.1	271,107	86.39
1918.......	*111.8*	*111.0*	*123.4*	*262,101*	*84.66*
1919.......	*116.2*	*99.8*	*134.0*	*231,019*	*87.84*
1920.......	122.8	112.8	135.5	244,274	90.72
1921.......	100.7	86.0	107.9	227,883	91.19
1922.......	98.7	93.8	102.5	250,435	94.50

There is some indication in the preceding table that the average railway employee did not produce so much in ton miles under federal control in 1918 or in 1919 as either before or after these years. In 1918 the output was lower both per employee and per hour. The record was, however, better for passengers than for freight, due to the rapid increase in the volume of this business. While it is dangerous to be dogmatic about the reeasons for the decline in the effectiveness of railway labor, there is evidence of lowered morale under federal control, while the administration suffered in 1919 the effects of a slump in traffic upon an enlarged labor force.

Utilization of Equipment—Routing Policies

The general policy of the Director-General with respect to routing was expressed in the following paragraphs of General Order No. 1:

1. All transportation systems covered (by the President's Proclamation) shall be operated as a national system of transportation.
2. The designation of routes by shippers is to be disregarded when speed and efficiency of transportation service may thus be promoted.
3. Traffic agreements between carriers must not be permitted to interfere with expeditious movements.
4. Through routes which have not heretofore been established because of short hauling or other causes are to be established

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[1] Interstate Commerce Commission, "Annual report on the statistics of railways of the United States," 1921, p. xxi; 1922, p. xxi.

> and used whenever expedition and efficiency of traffic will thereby be promoted. . . .

These instructions clearly expressed a policy of direct routing, and this was consistently the intent of the Railroad Administration during its entire life. It is rather curious that, in spite of this policy, the average length of haul upon American Class I railroads increased rather than diminished during the war. This is shown by the following table:

AVERAGE LENGTH OF HAUL UPON CLASS I RAILROADS IN THE UNITED STATES [1]

Calendar Year	Average haul, freight, for United States railroads considered as a single system (Miles)	Average journey per passenger (Miles)
1916	277.98	33.58
1917	288.18	36.13
1918	*296.89*	*38.48*
1919	*308.60*	*38.68*
1920	303.52	37.30
1921	304.11	35.53
1922	307.77	36.19

A tendency toward a greater average length of haul in American railroads, which was evident as early as 1906, is attributed by the Interstate Commerce Commission to fundamental economic changes, such as the development of the Western states, growth of exports, and shifting of centers of production and consumption.

The explanation of the increased length of haul during the period of federal control is probably to be found in minor changes in the character of the traffic handled. In so far as the influence of the Railroad Administration was effective, it is quite certain that it was exerted to reduce the quantity of transportation used to accomplish given displacements of persons and of goods.

Train and Car-loading

The Director-General was able, in 1918 and 1919, to increase the number of tons loaded into a train, and, during 1918 at least, to raise the average load per freight car. Similar though less marked results were obtained in passenger service.

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[1] Interstate Commerce Commission, Annual Report, 1924, p. 105.

AVERAGE CARLOAD AND TRAINLOAD FIGURES, CLASS I CARRIERS, 1916 TO 1923 [1]

Year ended Dec. 31	Tons per loaded freight car	Tons per freight train	Passengers per car	Passengers per train
1916	22.84	560	16	57
1917	24.77	597	17	65
1918	*26.99*	*628*	*20*	*76*
1919	*25.46*	*631*	*21*	*82*
1920	26.72	647	20	80
1921	24.60	579	16	67
1922	24.31	611	16	65
1923	25.17	644	16	67

The average number of tons per loaded freight car increased from 24.77 in 1917 to 26.99 in 1918. In 1919 it declined, but in spite of this the years 1918-20 show exceptionally heavy loading per car and, also, per train. Much of this result was undoubtedly due to concentrated and vigorous effort by the Railroad Administration.

Empty-car Mileage, Miles Per Car Per Day, Unserviceable Cars

The reverse side of the picture with respect to utilization of equipment is presented in the table on page 539 showing the percentage of empty-car mileage to total car mileage, the average number of miles traversed per car per day, the percentage of unserviceable to total equipment, and the number of ton miles daily per ton of freight-car capacity.

While the average load per loaded car was high in 1918 and 1919, the percentage of empty and unserviceable cars also increased. This, and especially the latter, caused in turn a reduction in the average number of miles accomplished per car per day. If it had not been for these offsetting factors, the heavier loading of loaded cars would have produced a much greater general efficiency in the use of equipment than was ever actually attained.

The best summary of the results which were secured is probably that given in column 5 of the following table, where the daily ton miles per ton of freight-car capacity is set forth. This figure is calculated by dividing the reported number of tons moved one mile by the product of aggregate freight-car capacity and the number of days in the year (365). It represents, therefore, the amount of useful

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[1] Interstate Commerce Commission, Annual Report, 1924, p. 106.

EMPTY-CAR MILEAGE; CAR MILES PER DAY; UNSERVICEABLE CARS; TON MILES PER DAY PER TON OF CAR CAPACITY[1]

Year ended June 30	Per cent empty car mileage of total freight-car mileage	Freight-car miles per car per day	Per cent freight cars unserviceable to total freight cars	Ton miles per day per ton of freight-car capacity
1915	33.7	23.7	7.7	9.23
1916	31.0	26.9	—	11.27
Year ended Dec. 31				
1916	29.9	27.4	6.2	11.76
1917	29.8	27.0	5.6	12.35
1918	*32.3*	*26.1*	*5.7*	*12.46*
1919	*31.3*	*24.1*	*7.1*	*10.95*
1920	32.1	26.6	7.0	12.46
1921	36.9	23.4	13.1	9.48
1922	32.7	23.5	12.8	10.31

work performed each day, on the average, by units of freight equipment capable each of supporting one ton of weight. This balancing figure reflects an improvement in car handling in 1918 over the results of the year before, but a distinct falling off in 1919.

This general conclusion from the summary data in the preceding pages is that the federal Railroad Administration made something less than a normal use of the track at its disposal during 1918 and 1919. The output per railroad employee fell off notably, mainly because of insistence upon the eight-hour day. As for the utilization of equipment, the facts are more difficult to interpret, but here a somewhat heavier loading per car and per train appears to have offset a larger proportion of empty-car mileage, an increase in the percentage of disabled equipment, and a consequent reduction in the daily mileage of freight cars.

The contrasts in all this between the results of government and private operation are not striking, except perhaps with regard to labor, but they do not indicate increased efficiency as a result of government control.

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[1] Interstate Commerce Commission, "Annual report on the statistics of railways in the United States." The statistics showing the percentage of unserviceable cars of 1915 and 1916 are based upon monthly reports to the American Railway Association. These averages range slightly higher than the later figures which were made out on the forms and according to the rules of the United States Railroad Administration.

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CHAPTER XXIX

THE TRANSPORTATION ACT OF 1920

Plans for Reconstruction

Even before it became apparent that the railroads of the United States were to be returned to private hands, a variety of proposals for their disposition were made to Congress. When Congress definitely refused to extend the period of federal control and opened hearings upon the subject of the return of the railoads to private ownership, these proposals multiplied. Shippers, railway managers, railway security holders, labor organizations, state railroad commissions, to say nothing of the Railroad Administration itself, the Interstate Commerce Commission, and many other individuals and special groups, formulated plans for future railroad organization and control.

It was all the more striking that interest in the country at large was so keen, because at the same time the attention of members of Congress themselves to the subject was very casual. While every shade of opinion was represented in the hearings before the House Committee, from that of Mr. Lenroot, who desired railroad nationalization, and Mr. Bryan, who argued for a system of skeleton trunk lines owned by the national government and branches owned and operated by the states, to that of the National Association of Owners of Railroad Securities, which wished the railroads turned back to private corporations with government financial support, Senator Cummins, in the Senate, spoke at times to well-nigh empty benches. Indeed, a single Republican orator found himself, upon one occasion, addressing the presiding officer and six Democrats.

Congressional History of the Transportation Act of 1920

The Transportation Act of 1920 was introduced in the House of Representatives toward the end of the first session of the Sixty-sixth Congress, on November 10, 1919. It was then referred to committee, reported out without amendment, debated about a week, and passed.

When the bill reached the Senate it was referred to the Senate Committee on Interstate Commerce, which reported it out on December 9. Meanwhile, from December 2 to December 20 the Senate debated a bill of its own. On December 19 the Senate substituted its own bill for the House bill and passed it the following day. Failure of the Senate to accept the House legislation made it necessary for each chamber to appoint conferees. The conferees reached agreement in four weeks, the conference report was promptly adopted in both houses by substantial majorities, and the Transportation Act was signed and officially promulgated under date of February 28, 1920.

Demands by Various Interests

What now were the principal demands made upon Congress in 1920 which the legislation just referred to was intended to satisfy?

One demand came from railroad labor. Labor questions had been significant during the period of federal operation, and they proved no less important in reconstruction. Indeed, the employees went further in 1920 than ever before, in that they now demanded a share in the management of the railroad system of the United States as well as fair wages and fair working conditions for themselves.

A second demand was voiced by the executives. It looked to a national, instead of a state, regulation of railroad operation and finance, and at the same time it presented, in a general way, the advantages of consolidation of railway companies. It was natural for railway officers to feel as they did, as they had been frequent sufferers from conflicts in jurisdiction or differences in policies between the states through which their lines were operated. As opposed to excessive federal control, the state railway commissioners pointed out the desirability of utilizing the knowledge and experience gained by state railroad commissions.

Finally, railway security holders as a group urged that the government adopt a positive attitude in the future toward railroad corporations. Instead of repressing them the security holders believed that the government should afford the railroads support, or at least that it should give the carriers some assurance that earnings in the future should amount to a reasonable percentage of the value of the transportation plant. This was put upon the ground that carriers would not otherwise be able to secure the new capital of which they stood in need. The demand of the security holders was backed by the railway executives and by the railway supply houses, and received a certain approval even from the shippers' organizations.

The Plumb Plan

In some ways the labor proposals which figured in the congressional hearings of 1920 were the most interesting of all the suggestions urged upon the legislature. The best known of these proposals were the ones embodied in the "Plumb plan," so-called after its author, Mr. Glenn E. Plumb. Advocates of the Plumb plan were in favor of government ownership. They went, however, beyond this, and suggested that the government should purchase the railroads of the country, and lease them to a corporation controlled by railway employees for purposes of operation. The corporation was to pay operating and maintenance expenses and interest on the purchase money bonds issued by the government by way of rental, and the surplus of revenues over these requirements was to be equally divided between the government and the employees.

The financial success of the Plumb plan would have depended upon the ability of the government to purchase private railroad systems at an economical figure, and, beyond this, upon the degree to which the efficiency of railroad labor would have been increased by more democratic organization and by the direct incentive to economy provided by an opportunity to share in net returns. On neither of these points did Mr. Plumb entertain any doubts; on the other hand, the outcome appeared problematical to most persons who considered the scheme, while it was evident that the entire financial risk rested upon the Treasury of the United States. For these reasons the plan was eventually laid aside.

Pre-war Statutes Providing for Conciliation and Arbitration

While the Plumb plan was rejected, Congress was disposed to pass some legislation regarding railway labor, and for this purpose considered and elaborated both upon war experience and upon pre-war legsilation providing for conciliation and arbitration in the railroad industry.

There were three pre-war statutes which could be turned to for guidance at this point. The first had been passed in 1888. This law empowered the parties to a dispute involving transportation companies and their employees to establish a board of arbitration for the occasion, which should have the power to subpœna witnesses, to administer oaths, and to render, although not to enforce, a decision in the controversy. It also empowered the President to appoint a temporary commission of two members to investigate and report, when the parties were not disposed to arbitrate.

The second and third pre-war labor statutes were passed in 1898 and 1913, respectively. Both provided again for voluntary arbitration by temporary boards chosen by the parties, but paid by the government and endowed by the government with certain powers. The investigating commission of the Act of 1888 became, however, in the later laws, a permanent mediating body; first with two, and then with three members, functioning upon application of either party to a dispute. According to the Act of 1898 the Commission of Mediation was to consist of the chairman of the Interstate Commerce Commission and the United States Commissioner of Labor *ex officio*. The statute of 1913 provided for a specially appointed Commissioner of Mediation and Conciliation, who, with two other government officials, was to constitute the board.

Finally, in addition to pre-war legislation, Congress had the benefit of the war-time boards of adjustment, and the experience of the Board of Wages and Working Conditions which had reported to the Director-General. This is the background to be borne in mind when studying the labor clauses of the Act of 1920.

Adjustment Boards

The two pieces of machinery which the Act of 1920 set up for handling disputes between transportation companies and their employees were, first, a new series of adjustment boards, and, second, a so-called Railroad Labor Board that took the place both of the former Board of Wages and Working Conditions and of the still older mediating bodies and arbitration tribunals of the Acts of 1898 and 1913.

The adjustment boards authorized by the Transportation Act were to be established by agreement between carriers and their employees or organizations representing their employees. It was understood that there might be few or many boards, according as the plan proved popular or unpopular. In each case the size of the board was to be determined by the parties interested, as well as other details such as territorial jurisdiction or length of term of members, while each board was to receive for hearing and decide disputes involving grievances, rules, and working conditions, which the railroads interested and their employees had not been able directly to adjust. There was no penalty, however, for violation of the boards' decisions.

By name and, in part, by function, the new adjustment boards resembled those which operated during the war. There were, however, differences between the war and the post-war organizations. One difference was that the war organizations were set up by decree; while the adjustment boards of 1920 depended for their existence upon the action of the parties between which they were to mediate.

Another difference was that the war-time boards were national in their jurisdiction, while the subsequent boards might be national or local, according to the terms of the agreement by which they were created. In general, the men favored national adjustment boards, because organizations of national scope were expected to remove the discussion of grievances from the atmosphere of local prejudice, because they would establish general principles for the interpretation of agreements, and because they would reduce to a minimum the number of men withdrawn from railroad service to serve as judges. The carriers opposed national boards because they believed that tribunals of this kind would lose contact with local conditions, would bring about undue standardization, and would involve unnecessary expense of time and money, not only in maintaining the boards, but also in attending upon them.[1] That national boards might strengthen national railway unions was an additional argument against them from the carriers' point of view.

These differences delayed the establishment of adjustment boards under the Act of 1920, but by 1924 a board had been erected for engine and train-service employees on one large railway system in the East, another covering three systems in the East, one covering the greater number of systems in the Southeast, and another covering the majority of the railroads in the West. Formal boards of adjustment for other classes of employees were also set up on individual railroads.[2]

Railroad Labor Board

Besides the adjustment boards, the Transportation Act of 1920 provided for a "Labor Board." This was intended to be a tribunal of very considerable dignity and permanence. The members of the Labor Board were to be nine in number, including three representatives of the public, three of labor, and three of management. The public representatives were to be appointed directly by the President; other members were appointed by the President, but out of a specified number of nominees submitted by the carriers and the labor interests, respectively. The salaries of members of the Labor Board were fixed at $10,000, their term of office at five years, and their jurisdiction was extended to questions of both wages and salaries, and to disputes over grievances, rules, and working conditions which the boards of adjustment could not settle because they had not been organized or because they could not or would not render a majority decision. Like the adjustment boards, the Labor Board had no authority to enforce any judgment it might pronounce.[1]

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[1] Hearings on Howell-Barkley bill, 1924, testimony Holden, Richberg.

[2] Hearings on Howell-Barkley bill, testimony Walbers.

The immediate precedent for the Railroad Labor Board was the Board of Wages and Working Conditions mentioned in Chapter XXVIII. It will be observed, however, that the Board partook also of the functions of the boards of arbitration and investigating tribunals of pre-war times. It differed from the earlier boards of arbitration mainly in being a permanent body, and from the mediating commissions of 1898 and 1913 in that it was empowered to take jurisdiction of, and to render an opinion in, a dispute without the necessity of prior application by either of the parties concerned. The first of these characteristics promised to make the board expert; the second promised to make it active.

English Labor Boards

It is interesting to observe at this point that the plan of organization of the United States Labor Board of 1920 was followed in considerable measure in the British "Railway Act" of 1921. In Great Britain, the board of final appeal in matters of wages and working conditions is called the National Wages Board. It consists of six representatives of the carriers, six of the employees, and four representatives of the users of railways, with an independent chairman nominated by the Minister of Labor.

Under the National Wages Board is a Central Wages Board, composed of eight representatives of the railways and eight representatives of the railway employees; while the Act also declares that arrangements shall be made for establishing, for each railway company affected, one or more councils, made up of officers of the company and representatives of the men. Questions relating to rates of pay, hours of duty, or other conditions of service of employees are considered first by carriers and employees in conference, then by the Central Wages Board, and, lastly, by the National Wages Board. This organization reasonably corresponds to the American series of system conferences, national adjustment boards, and Railroad Labor Board.[1]

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[1] The Interstate Commerce Commission was charged with the duty of prescribing the manner in which carriers and labor interests were to make their nominations. It accordingly designated the Association of Railway Executives as the organization to present nominations for board members representing management. In the case of labor, the Commission originally set up three groups. These represented, first, engineers, firemen, conductors, trainmen, and switchmen; second, machinists, boilermakers, blacksmiths, sheet-metal workers, carmen, and electrical workers; and, third, telegraphers, maintenance-of-way employees, shop laborers, signalmen, clerks, freight-handlers, express and station employees, and stationary firemen and oilers. Subsequently the Commission added a fourth group, made up of a somewhat miscellaneous assortment of associations, including train dispatchers, yardmasters, traveling auditors, roadmasters, and station agents. This fourth group provided the more important groups of subordinate officials opportunity to make nominations to the Labor Board, while it also found place for skilled and unskilled employees who were not members of any association.

Work of the Railroad Labor Board

Up to April 30, 1925, the Labor Board had received 13,514 complaints, of which 12,727 had been settled and 787 were pending. Of these complaints, 5,615 were listed by the Board as disputes of a local nature, affecting one railroad and its employees in one or more classes of service, or possibly two or three railroads at one point. Frequently very minute points were involved in such controversies. The balance, or 7,899 complaints, were described as disputes of a general nature. All of these were concerned with the general revision of wages or rules and working conditions. The majority of the general cases and all but 39 of the special ones were brought by organizations of employees.[2]

The number of decisions rendered by the Labor Board after 1920 was something over 2,000, being less than the number of complaints disposed of because many complaints are sometimes settled by a single decision. Most of the rulings were unanimous, but an examination of the decisions up to December 31, 1925, reveals a total of 176 dissenting votes to majority reports, of which 6 were delivered by representatives of the public, 113 by representatives of the carriers, and 57 by representatives of the employees. Mr. Wharton, an employee representative, is alone responsible for 40 out of the 57 negative votes credited to his group. So far as we may judge from these figures, the militant members of the Board were those representing the carriers' interests, but in most instances all parties found themselves ultimately able to agree.

Principal Subjects Dealt With

The principal subjects dealt with in the more important cases were, first, wages, and, second, rules and working conditions. In the field of wages, the Labor Board is best known by its decision of July, 1920, increasing the pay of railway employees by an amount estimated at $600,000,000, and by the later decisions of 1921 and 1922 after prices had begun to decline, which are estimated to have brought about aggregate savings to the carriers of $400,000,000 and $135,000,000, respectively. There were no general wage decisions after 1922, but most of the later rulings in specific cases provided slight increases in pay.

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[1] Railways Act, 1921, 11 and 12 George V, chap. lv, p. 471.

[2] United States Railroad Labor Board, Statement of Disputes Presented April 15, 1920, to April 30, 1925. Issued May 1, 1925. The thirty-nine special cases referred to in the text were brought by unorganized employees. The general cases include four instances of requests by carriers for reduction in wages, involving 1,065 "disputes" in the terminology of the Board, and one instance involving 1,223 "disputes" where carriers asked for a decrease and employees for an increase in wages. Other general cases were initiated by employees or begun by the Board upon its own initiative.

In the field of rules and working conditions, the Board revised the working rules applicable to the shop crafts, telegraphers, telephoners, and agents, stationary-engine and boiler-room employees, and signal-department employees. Engine-service, train-service, and marine-department employees were not substantially affected. The rules in question related to Sunday and holiday work, vacations, sick leave, travel time, intermittent service, and similar matters. Much detail was involved in these regulations, and the Board appears to have reasonably satisfied all parties concerned, although the effect of its action was on the whole to increase the carriers' operating expenses.

Criticisms of the Railroad Labor Board

The principal criticisms levied against the Railroad Labor Board were the following:

1. The tripartite organization was said to be unfortunate, because it tended to confirm the representatives of management and labor in a partisan attitude, and threw the weight of decision upon the public representatives.

2. The public members of the Board lacked technical knowledge.

3. The permanent character of the Board unfitted it for the work of mediation, because any long series of decisions inevitably displeased one side or the other and thus destroyed the good will which a mediator must enjoy in order to secure success.

4. The machinery of the Board was unwieldy for the settlement of minor disputes.

5. In practice, the Board was accused of being slow, prejudiced, committed to wrong principles of action, and susceptible of being used as a means of propaganda looking to the reduction of wages.

To these five objections of the employees, the National Industrial Traffic League, a shippers' organization, added that the operation of an agency such as the Labor Board tended to undermine discipline, to limit freedom of contract, and, because the Board acted nationally, to strengthen the national organizations both of employers and of employees.

Defense of the Railroad Labor Board

The principal arguments in behalf of the Labor Board were the following:

1. The Board, through its tripartite organization, recognized the public interest in railroad labor disputes, while it retained the advantage of whatever technical information representatives of management or employees might possess.

2. Public members of the Board became competent by experience.

3. The permanent character of the Labor Board trained Board members and made it possible to build up a staff of experts and statisticians.

4. The official adjudication of labor disputes in the railroad industry prevented a number of strikes, for it became practically impossible for any organization to win a strike over the decision of a tribunal upon which all parties were fully represented and before which the disputants were fully heard.

5. While the correctness of the decisions of any judicial body is proper subject for debate, most of the rulings of the Board commanded the assent of all of its members, and public opinion, on the whole, supported the majority of the Board even when decisions were not unanimous.

Reasons for Failure

The Labor Board ultimately failed to maintain itself because it had no power to compel acceptance of its decisions, because the absence of any adequate number of adjustment boards overwhelmed it with minor controversies, and because the employees came to regard it as a hostile organization to which their interests could not safely be intrusted. The result was an increasing amount of wage negotiation and settlement between carriers and employees without reference to the Board's machinery, and, finally, the introduction into Congress in January, and the passage of a bill in May, 1926, remodeling the mediation and arbitration provisions of the Act of 1920. This bill received the joint indorsement of both carriers and employees prior to enactment, and was passed by Congress in the form in which it was introduced.[1]

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[1] Sixty-ninth Congress, First Session, Public Acts of 1926, No. 257.

The Railway Labor Act of 1926

The "Railway Labor Act" of 1926, like the Transportation Act that preceded it, made provision for the voluntary establishment of adjustment boards to which disputes might be submitted if the parties in conference failed to agree. But beyond this, the new law replaced the Labor Board by a Board of Mediation, to be composed of five members to be appointed by the President of the United States for five-year terms, at salaries of $12,000. Either party to a dispute might invoke the services of this new tribunal, or the Board might proffer its services without application, but the Board of Mediation was not to decide a controversy. Instead of this, the Board exercised the following functions:

1. It was expected, first, to use its best efforts, by mediation, to bring the parties to an agreement;

2. Failing agreement, its duty was to urge the parties to submit their controversy to arbitration. The arbitration board contemplated at this stage of the proceedings was to consist of three or six members, one or two, as the case might be, to be named by each of the parties, and the balance by the arbitrators first selected, or, in the event of failure to agree, by the Board of Mediation. Members of the arbitration board were to be paid by the parties naming them, except that the arbitrators selected by the members first chosen or by the Board of Mediation were to be compensated by the Board. The compensation and expenses of the Board of Mediation itself were to be paid by the United States. Both parties to the dispute were to agree in advance to accept the award of an arbitration board as final and conclusive.

3. In case carriers or employees, or both, refused to arbitrate, and the dispute threatened to interrupt interstate commerce to a degree such as to deprive any section of the country of essential transportation service, the Board of Mediation was required to notify the President, who might then, in his discretion, create a special board for the occasion, to investigate and report respecting the dispute. The report of the special board had no binding force, but the law provided that after the creation of such a board, and for thirty days after the board had made its report to the President, no change, except by agreement, should be made by the parties to the controversy in the conditions out of which the dispute arose.

The essential features of this arrangement were, first, a permanent mediating body; second, the selection of special boards for arbitration; third, delay and publicity in case the parties failed to agree; and fourth, absence of public representation at any stage of the proceedings up to the last. Space does not permit further analysis of the provisions of the new law, and experience has been too slight to allow prediction regarding its probable success.

Need of Carriers for New Capital

We may now turn from the labor clauses of the Transportation Act to the provisions relating to railroad earnings. The basic assumptions of the law of 1920 with respect to earnings were that government initiative, accompanied by a public statement of policy as to rates, was necessary in order to enable carriers to obtain funds for the proper maintenance and development of their public service. These assumptions marked a distinct change from the congressional attitude prior to 1914, but they found their support in certain facts and estimates of considerable interest.

First, as to the amount of new money which the carriers needed to secure:

Secretary Hoover has stated that, according to the experience of twenty years before the war, we must build an extension of lines annually, including terminal facilities, additional sidings, etc., equal to the construction of a new railway from New York to San Francisco. He added that we must construct each year, in addition, at least 120,000 cars and 2,500 locomotives.[1]

How much additions of this kind and amount will cost it is of course difficult to say, but the Joint Committee on Agricultural Inquiry in 1921 expressed the opinion that at least $750,000,000 of new investment in American railroads would be needed annually for several years. This is borne out by the statistics of improvements actually made between 1920 and 1926.

Railways of Class I have made the following expenditures for new equipment and other capital improvements during the past seven years: [2]

1920	$ 653,267,000
1921	557,035,000
1922	429,273,000
1923	1,059,149,000
1924	874,743,000
1925	748,191,000
1926	885,086,000

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[1] *Railway Age*, February 11, 1922. Statement before I. C. C., February 3, 1922.

[2] Bureau of Railway Economics, Miscellaneous Series No. 41, Washington, 1926; *Ibid.*, No. 43, 1927.

The average of the seven years is $743,800,000, and we may tentatively accept this figure as representing the amount which the railroads of the country will find it necessary each year to raise.

Interest and Security

Investors require security and at least the current rate of interest, to induce them to contribute to railroad development.

Taking these matters up in reverse order, it was evident in 1920 that the carriers would for some years be required to pay a higher rate of interest than had been customary before the war. Whereas high-grade bonds had sold in 1914 upon a 4-per-cent basis, it was necessary to pay 7 or 7½ per cent in 1920 to market obligations at par. This increased dearness of capital was, in part, a result of destruction due to war, in part the consequence of monetary inflation, and in part the effect of competition of tax-free securities; but however caused, it promised to increase the interest expenditure of American railroads for a considerable time to come.

Meanwhile the security which railroads could offer had materially decreased. Critics of the carriers alleged that the insecurity of railroad investment was the result of financial malpractice or incompetence. There was doubtless ground for this conclusion in individual instances; but the general impairment of the railroad position was due more to the difficulty of adjusting rates to changing levels of wages and of prices than to recklessness or dishonesty on the part of railroad managements. Nor must the pressure of competition from the expanding automobile industry and from a stimulated shipping service be overlooked.

In view of these various facts, Congress deemed it necessary to extend financial support to the railroads of the country. The legislature might have met the apparent emergency by loaning money direct to carriers at a low rate of interest, and it did, in fact, make some provision for temporary railroad loans. Or it might have strengthened railroad credit in the open market by some sort of government indorsement of railway securities or by a guaranty of railway earnings. Thus the French Government has for many years past contributed from the public treasury when the earnings of certain important French railway systems have fallen below an agreed sum. These contributions are regarded as advances, and are secured by pledge of railway property, especially rolling stock. A similar plan has been followed by the United States Government in the Philippine Islands. The heavy cost of the guaranties extended to

American railroads between March and September, 1920, was probably the reason why an extension of this practice was not seriously considered.

Congress Extends Support to Railroad Rates

The plan which Congress chose to adopt in 1920 was not that of a guarantee of interest, but rather that of a supported rate.

The wording of the law upon this point was as follows :

> "In the exercise of its power to prescribe just and reasonable rates the Commission shall initiate, modify, establish or adjust such rates so that carriers as a whole (or as a whole in each of such rate groups or territories as the Commission may from time to time designate) will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn an aggregate annual net railway operating income equal, as nearly as may be, to a fair return upon the aggregate value of the railway property of such carriers held for and used in the service of transportation: *Provided,* That the Commission shall have reasonable latitude to modify or adjust any particular rate which it may find to be unjust or unreasonable, and to prescribe different rates for different sections of the country.
>
> "The Commission shall from time to time determine and make public what percentage of such aggregate property value constitutes a fair return thereon, and such percentage shall be uniform for all rate groups or territories which may be designated by the Commission. In making such determination it shall give due consideration, among other things, to the transportation needs of the country and the necessity (under honest, efficient and economical management of existing transportation facilities) of enlarging such facilities in order to provide the people of the United States with adequate transportation: *Provided,* That during the two years beginning March 1, 1920, the Commission shall take as such fair return a sum equal to 5½ per centum of such aggregate value, but may, in its discretion, add thereto a sum not exceeding one-half of one per centum of such aggregate value to make provision in whole or in part for improvements, betterments or equipment, which, according to the accounting system prescribed by the Commission, are chargeable to capital account."

In discussing the financial provisions of the Act of 1920, Senator Cummins pointed out that the average rate of return upon the property investment accounts of all the railroads in the United States for the three years ending June 30, 1917, had been 5.2 per cent. The rate selected for the future was apparently based upon this past experience, although the possibility that railroad property accounts had been inflated in the past made the new rate experimental. In future practice it was expected that the Interstate Commerce Commission would use the valuations that it was obtaining under the Railroad Valuation Act of 1913, and that in the absence of completed valuations it would use its best judgment in the light of all available information.

Earnings Under the Transportation Act of 1920

The Commission has now operated under the financial clauses of the Transportation Act for approximately seven years, and it is possible to say something regarding their success. Four rate groups have been established. The Eastern includes, generally, the territory north of the Ohio and Potomac and east of the Missouri Rivers; the Southern, the territory south of the Ohio and Potomac and east of the Mississippi Rivers; and the Western and Mountain-Pacific groups, the territory west of the Mississippi River. The Commission has, further, adopted, in Ex Parte 74, a tentative valuation of $18,900,000,000 for the railroads in these areas as, of July, 1920, and actually has established rates intended to yield, first, 6 per cent, and then 5¾ per cent upon the valuation referred to, increased by actual investment made subsequent to the time when the tentative valuation was made. Without much question these acts have helped to re-establish railroad credit, in some measure because of the revenues which they have enabled the carriers to collect, and in part because of the friendly governmental attitude which they indicate. On the other hand, the law has not worked out altogether as expected in at least three respects.

In the first place, the official valuation which the Interstate Commerce Commission was supposed to make under the Railroad Valuation Act of 1913 is still incomplete. In fact, on October 31, 1926, after more than thirteen years of work, final valuations had been reached on only 7.3 per cent of inventoried mileage, although progress had, of course, been made upon most of the remaining systems. Tentative reports had been served at this time covering 160,486 miles of road, or 65.67 per cent of the whole. The complicated problems involved in valuation proceedings, and the great extent of mileage to be covered has made progress expensive and slow. Until the detailed valuations of the Commission are finished, the rate clauses of the Transportation Act can be administered only upon a basis of general estimate.

Acting now upon general estimate, and resting our conclusions upon the tentative valuation of $18,900,000,000 adopted by the Interstate Commerce Commission in Ex Parte 74 and increased by subsequent investments, it appears that the rates prescribed by the Commission have not yielded the earnings which they were intended to produce. This shown by the following table:

RELATION OF NET OPERATING INCOME OF CLASS I CARRIERS (INCLUDING LARGE SWITCHING AND TERMINAL COMPANIES) TO TENTATIVE VALUATION OF THESE CARRIERS, INCREASED BY SUBSEQUENT INVESTMENT

Year	Actual rate earned on: Property investment (Per cent)	Tentative valuation (Per cent)
1921	2.92	3.33
1922	3.61	4.14
1923	4.48	5.22
1924	4.33	5.01
1925	4.85	5.63
1926	5.13	5.98

The lowest yield on property investment recorded for American railroads from 1921 to 1926 was 2.92 per cent in 1921, and the highest, 5.13 per cent in 1926. The yield on a tentative valuation has been somewhat higher than that on property investment, but the railroad earnings for the country did not reach 5½ per cent of the tentative valuation set by the Commission until 1925. In 1922, after two years had expired, the Commission ruled that 5¾ per cent was to be regarded as a fair return. Still less, of course, was this sum earned, and the temper of public discussions inclines one to doubt whether carriers in this country will ever be permitted to collect so much over any considerable period of time.

Recapture of Excess Earnings

Finally, the rate clauses of the Transportation Act have created a somewhat unexpected situation in dealing with excess earnings and with the consolidation of carriers. These matters are somewhat complicated and deserve more than a passing reference.

The essential part of the Act which relates to excess earnings is as follows:

> "Inasmuch as it is impossible (without regulation and control in the interest of the commerce of the United States considered as a whole) to establish uniform rates upon competitive traffic which will adequately sustain all the carriers which are engaged in such traffic and which are indispensable to the communities to which they render the service of transportation, without enabling some of such carriers to receive a net railway operating income substantially and unreasonably in excess of a fair return upon the value of their railway property held for and used in the service of transportation, it is hereby declared that any carrier which receives such an income so in excess of a fair return, shall hold such part of the excess, as hereinafter prescribed, as trustee for, and shall pay it to, the United States.
>
> "If, under the provisions of this section, any carrier receives for any year a net railway operating income in excess of 6 per centum of the value of the railway property held for and used by it in the service of transportation, one-half of such excess shall be placed in a reserve fund established and maintained by such carrier, and the remaining one-half thereof shall, within the first four months following the close of the period for which such computation is made, be recoverable by and paid to the Commission for the purpose of establishing and maintaining a general railroad contingent fund as hereinafter described."

The Act goes on to provide that the half of the excess income retained by the carrier may be used for any lawful purpose after a reserve of 5 per cent of the value of its property shall have been accumulated, and that the half which goes to the government shall be placed in a revolving fund from which the Interstate Commerce Commission may make loans to carriers or with which it may buy equipment or facilities for the purpose of leasing them to carriers.

The purpose of the excess earnings provisions of the Transportation Act is to equalize the position of carriers who, because of differing location, are unable to make the same earnings as their competitors at equal rates.

The constitutionality of the Act has been questioned on the ground that Congress has no power to appropriate earnings derived from reasonable rates, and that railway charges are fixed by the Interstate Commerce Commission and may be assumed for this reason to be reasonable. The Supreme Court has, however, ruled that there is no appropriation because the carriers never acquire title to, but only accept custody of, receipts which exceed a fair return upon a fair value of its property.[1]

It will be readily understood, however, even on this theory, that prior valuation is essential to recapture, for otherwise there is no way to distinguish the portion of its receipts which a carrier holds in trust for the public. Hence the delay in the Interstate Commerce Commission valuation already alluded to has kept recapture upon a voluntary basis. Orders have been served upon all carriers subject to the Act, and reports have been received admitting excess earnings of $10,845,901.48 over a period extending from the passage of the Transportation Act in 1920 to the end of the year 1923. Of this amount the Commission has collected $4,955,197.27, or something under one-half. The majority of payments have been made under formal protest, and therefore the contingency fund, composed primarily of such payments, has not been made available for the uses contemplated by the statute.

We have now to summarize rapidly the remaining features of the transportation legislation of 1920, with the exception of the clauses relating to consolidation, already fully considered in Chapter XXIV.

Transition from Public to Private Management

Inasmuch as the Transportation Act marked the return of railroads to private management, it necessarily contained a number of clauses revoking powers of operation and control granted to the President under previous legislation and providing machinery for the liquidation of claims against the government and for the settlement of disputes of whatever nature arising out of federal control. These provisions of the law were important, but their temporary and transitional character makes it undesirable to discuss them in detail. The responsibility of representing the government in these matters was assumed by Mr. J. C. Davis, who succeeded Mr. John Barton Payne as Director-General[2] in March, 1922 Mr. Davis performed his duties with such expedition and success that by January, 1926, he was able to withdraw and to leave the task of completing pending negotiations to the Secretary of the Treasury, who now assumed the title of Director-General for this purpose. The six-months government guaranty of interest during reconstruction and the final cost of this and of federal operation to the taxpayer have been discussed in Chapter XXVII.

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[1] Dayton-Goose Creek Ry. *v.* U. S., 263 U. S. 456, 1924.

[2] The successive Directors-General were W. G. McAdoo, appointed December 27, 1917; Walker D. Hines, appointed January 10, 1919; John Barton Payne, appointed May 18, 1920; James C. Davis, appointed March 28, 1922; and Andrew W. Mellon, appointed January 1, 1926.

New Powers Conferred Upon the Interstate Commerce Commission—Rates

The Transportation Act altered the powers of the Interstate Commerce Commission over railroad rates in four particulars. In the first place, it conferred upon the Commission the authority to fix a minimum rate. This logical extension of the power to fix a maximum rate, first granted in 1906, strengthened the hands of the Commission in dealing with cases of discrimination, allowed it to protect water carriers against destructive competition, and enabled it also, more generally, to require each commodity to contribute its fair share to railroad revenues.

A second amendment, relating to the suspension of rates, reduced the total period during which a proposed rate might be suspended from ten to five months. The clause here amended was introduced in 1910 in order to protect the public against the collection of rates against which protest was made while these rates were the subject of litigation before the Commission. As originally passed, the Commission was authorized to suspend the operation of proposed schedules for 120 days, and then, if necessary hearings were not completed, to extend the suspension for a further period of six months, a total of ten months in all. In 1920 the extension of the suspension was limited to thirty days, thus limiting the period of uncertainty to five months. In 1927, the period was again changed to seven months, where it now stands.

Still another amendment in 1920 changed the clause in the existing law which required rates, fares, and charges to remain in existence for a period of two years after the determination of the Commission, to provide for continuance until further order, or for a specified period of time, according as should be prescribed in the original order, unless the rates in question should be suspended or modified or set aside by the Commission, or be suspended or set aside by a court of competent jurisdiction.

Finally, the long-and-short-haul clause of the Act to Regulate Commerce was amended in the manner already set forth in Chapter XV.

Construction and Abandonment

The clauses in the Transportation Act of 1920 relative to the construction of new and the abandonment of old lines of railroad have been discussed in Chapter XVII. Briefly summarized, they required preliminary approval by the Interstate Commerce Commission before a new road might be built or an old road dismantled. This was an important addition to the Commission's power, although one already possessed by many state railroad or public-utility commissions. It was limited in effect, for constitutional reasons, to railroads engaged in interstate commerce, but inasmuch as most rail carriers participate in interstate business to a greater or less extent, the Commission's control in this respect mentioned nearly all railroads of any importance in the United States.[1]

Operation

The Commission has long had authority over regulations and practices connected with the receiving, handling, transporting, and storing of property in so far as necessary to enforce service upon just and reasonable terms, as well as authority in a limited field derived from the obligation to enforce the various safety-appliance Acts. Such authority, however, fell far short of the general power to issue orders regarding operating practice, as it was directed to the prevention of extortion and discrimination or to the introduction of specific safety devices, and not to the question of efficiency of operation.

In 1917, the Commission was empowered to establish reasonable rules, regulations, and practices with respect to the movement, distribution, exchange, interchange, and return of railroad freight cars, and, in case of necessity, to suspend existing regulations and to issue directions regarding car service for such length of time as it believed to be in the public interest.[2]

In the Transportation Act of 1920, the jurisdiction of the Commission was extended to freight locomotives and to special equipment as well as to freight cars, and to the use, control, and supply of equipment as well as to its movement, etc. Moreover, in case of shortage of equipment, congestion of traffic, or other emergency, the Commission was empowered to make just and reasonable directions (a) with regard to car service without regard to the ownership as between carriers of locomotives, cars, and other vehicles, (b) to require the joint or common use of terminals, and (c) to give directions for preference or priority in transportation, embargoes, or movements of traffic under permits. Again, whenever the Commission was of opinion that any railroad was unable to transport the traffic offered it so as properly to serve the public, it might issue directions with respect to the handling, routing, and movement of the traffic of such carrier and its distribution over other lines of roads.[1] Still again, the Commission might, after hearing, order any railroad subject to its jurisdiction to provide itself with safe and adequate facilities for car service, and even to extend its line or lines.

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[1] In State of Colorado *v.* United States (46 Sup. Ct. Rep. 452, 1926) the United States Supreme Court held that the Interstate Commerce Commission had authority to authorize discontinuance of intra- as well as of interstate traffic under some circumstances. This case involved a railroad located entirely within a state. The carrier was operated by a larger company, at a loss, and the Commission proceeded upon the theory that continued operation would amount to a burden upon interstate commerce, because the parent company was engaged in such commerce and would have to make the losses good. The Court upheld the Commission's decision.

[2] 40 Stat. L. 101, 1917.

No change was made in the Commission's authority under the Safety Appliance Acts except that the federal body was now empowered to require carriers to install automatic train-stop or train-control devices, as well as to enforce the older acts relating to automatic couplers, hand holds, and similar apparatus for the preservation of life and limb.

Securities

The new law gave to the Interstate Commerce Commission for the first time, power to control security issues of carriers subject to the Act to Regulate Commerce. It was made unlawful for any carrier to issue any share of capital stock or any bond or other evidence of interest in or indebtedness of the carrier, or to assume any liability as lessor, lessee, guarantor, indorser, or surety in respect to securities of any other person or corporation until authority from the Commission had been secured. Certain directions were given the Commission in the administration of its new powers, and this jurisdiction of the federal body was declared to be exclusive and plenary.

The principal purpose of the amendment was to prevent glaring malpractices in the issue and sale of railroad stocks and bonds such as had become familiar to the general public through Interstate Commerce Commission investigations of the New Haven, Rock Island, Père Marquette, and St. Louis and San Francisco Railways. Incidentally, the power to regulate security issues later proved of value to the Commission in controlling railway consolidation under other sections of the law, and was an appropriate corollary to the assumption by Congress of responsibility for railroad earnings.

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[1] The constitutionality of the grant of power described in the text was affirmed in Avent *v.* United States, 45 Sup. Ct. Rep. 34, 1924.

Clauses regulating the issue of railroad securities were to be found, in 1920, in the statutes of several of the states, and earlier proposals for federal legislation had been approved by the House of Representatives in 1910, 1914, and again in 1916. The idea was not, therefore, new. The definite substitution of federal for state control in the finances of interstate carriers subject to the Act was, however, a boon to the carriers because it relieved them from the necessity of complying with various and sometimes conflicting state statutes, and it was also in the public interest because central regulation is easier to enforce than state regulation and more likely to express a uniform and consecutive policy.

Accounting

The Transportation Act of 1920 declared that the Interstate Commerce Commission should have access to all documents, papers, and correspondence kept by carriers subject to the Act as well as to all accounts, records, and memoranda. It also directed the Commission to prescribe the classes of property for which depreciation charges should be set up and the percentage of depreciation to be charged in each class. These additions to the law were of some significance, but in general the accounting clauses of the Interstate Commerce Act were left unchanged.

The preceding pages have made it plain that the Transportation Act of 1920, on the one hand, began certain experiments relating to the control of railroad wages and to the support of railroad earnings, and, on the other hand, enlarged in many respects the powers of the Interstate Commerce Commission with respect to railroad construction, operation, rates, accounting, and finance. The Commission is now the most powerful of the regulative boards associated with the federal government at Washington as well as the most voluminous contributor, through its decisions, to the expanding body of our administrative law. During the year ending December 31, 1926, it rendered 1,035 decisions, conducted 1,584 hearings, published reports on 11 investigations, and spent the very substantial sum of $5,936,723.

Increase in the Work of the Interstate Commerce Commission

The extent to which the work of the Interstate Commerce Commission has grown under the legislation of the past twenty-two years, including that of 1920, is strikingly illustrated by statistics of the number of complaints filed and by the annual expenditures of the Commission in exercising the powers intrusted to its care:

INTERSTATE COMMERCE COMMISSION—COMPLAINTS AND EXPENDITURES IN SELECTED YEARS, 1905–26

Year	Number of complaints filed	Expenditures of the Commission
1905	568	$ 330,739.56
1913	1,023	1,560,404.21
1920	1,040	5,542,373.70
1926	1,524	5,936,723.25

The largest single item of expense included in the foregoing table is that resulting from the federal valuation of railroad property undertaken in compliance with the Act of 1913.[1]

The amount of money spent in valuation work may be expected to decline in future years when the initial survey shall have been completed. The tendency of the remaining Commission outlays to increase will, however, probably persist. It is the result of an increasing variety in regulation, the introduction of new media of transportation such as the motor-vehicle, the undertaking of experiments such as the program of consolidation or the attempt at rate revision in compliance with congressional theories, and the general strengthening of federal as opposed to state authority under decisions of the federal courts.

Existing Devices for Expediting Procedure

During the four years ending October 31, 1926, the Commission disposed of slightly more cases than were filed. There was not, therefore, during this time, any increase in the number of pending suits, but the accumulation which existed before 1923 still remained. Moreover, the press of business has compelled the Commission to resort to expedients. One expedient has been the subdivision of functions within the Commission itself. Relief has also been obtained by the adoption of "shortened" or "modified" procedure calculated to avoid the necessity of hearings or to confine the testimony taken at hearings to points upon which the parties disagree. Still more effective has been the employment of examiners. In most

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[1] 37 Stat. L. 701, 1913.

Commission cases at the present time, original hearings are held and the testimony and exhibits essential to a decision are presented to lawyer-examiners, who write a tentative decision based upon the record. This tentative decision is submitted to the parties for criticism. A division of three members of the Interstate Commerce Commission then holds, if requested, a further public hearing, at which briefs are presented and oral arguments delivered, after which the division approves or modifies the tentative decision and promulgates a final report. The decision of the division may be appealed to the whole Commission, but in most instances it determines the controversy.

It is only by the employment of examiners that the Interstate Commerce Commission has been able to keep up with its work. It is evident, however, that the system imposes a heavy responsibility upon a poorly paid body of subordinate officials, and even with their assistance, members of the Commission are frequently unable to give proper consideration to matters which are laid before them.

Proposals for Regional Representation

Two recent amendments have been proposed to the law to change the composition of the Commission and to alter its procedure. The first of these is designed to make the Commission, in a certain sense, a representative body, by enlarging its membership to twelve and by requiring new members to be selected, as vacancies occur, so that two commissioners will eventually be taken from each of the following districts: New England, Middle Atlantic States, Lake Group, Gulf Group, South Atlantic Group, Mountain Group (including the Pacific coast). Examination of the present membership of the Interstate Commerce Commission shows that the effect of this reorganization would be to increase the number of commissioners appointed from New England and from the Southern States and to decrease the number from the Middle Atlantic States, the Gulf States, and the Far West. The proposal is objectionable because the new distribution would not correspond to volume of business, and also for the fundamental reason that the Commission should be a national body, not a group of representatives of sections. It is supported by those who emphasize the importance of local knowledge in rendering wise decisions, and by others who frankly believe that a new basis for the selection of Commissioners will lead to "fairer" treatment of the sections in which their interests lie.

Proposal to Establish Sub-commissions

The most promising suggestion for the relief of the Interstate Commerce Commission in handling formal complaints takes the form of a proposal to establish seven regional sub-commissions, in different parts of the United States. Each of these sub-commissions will consist of three members, if the plan is approved, appointed by the President of the United States, for terms of seven years, with salaries of $10,000, or slightly less than the salaries of the Interstate Commerce Commissioners themselves. After the system is inaugurated, complaints filed at Washington will be assigned to the appropriate sub-commission and will be then heard and decided, subject always to appeal to the Interstate Commerce Commission.

The success of the regional sub-commission plan will, doubtless, depend upon the frequency of appeal and upon the permanency of tenure of the new commissioners. There is some reason to believe, however, that the higher salary and increased prestige enjoyed by sub-commissioners as compared with examiners will hold better men than can now be kept in service, and that a great mass of minor cases that now clog the docket of the Interstate Commerce Commission will never be appealed.

A bill to establish regional sub-commissions was introduced in the House of Representatives in 1925 and again in the Senate in 1926, but no favorable action has as yet been taken.

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CHAPTER XXX

THE RELATIONS BETWEEN THE PUBLIC AND THE RAILWAYS IN ENGLAND

English Legislation Through Railway Charters

Relations in Great Britain between the State and the companies engaged in common carriage began with the issue of corporation charters by the British Parliament. The charter created the common-carrier corporation and endowed it with power. It provided, at the same time, a convenient opportunity to limit and to define the powers which the State desired a company to exercise, and for many years the principal statutory regulation of carriers in the United Kingdom was that expressed in corporation charters. Standardization of charter provisions was accomplished by "Clauses Consolidation Acts" passed in 1840, 1845, and 1863,[1] providing model clauses to be incorporated by reference in future Acts of Parliament, which included, among other things, the requirements that railway and canal tolls and charges should not exceed certain stated maxima, and that they should be exacted equally from all persons.

Railway and Canal Traffic Act of 1854

The Clauses Consolidation Acts were supplemented in 1854 by the so-called Railway and Canal Traffic Act of that year.[2] This was a law of the same type as the American Interstate Commerce law of 1887, though less elaborate. The law of 1854 said nothing on the subject of maximum or reasonable rates, but it directed railway companies and canal companies to afford reasonable facilities, and forbade undue preference or discrimination. Jurisdiction over complaints under the Act of 1854 was conferred upon the Court of Common Pleas in England, upon the Superior Court in Ireland, and upon the Court of Session in Scotland. It was not until 1873 that a railway commission was set up to carry into effect the provisions of the Act of 1854, and not until 1888 that this commission assumed the form which it takes to-day.

Railway Commission of 1888

The clauses of the Act of 1888 with respect to a commission were as follows:

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[1] 9 Victoria, 1845, Caps. xvi, xvii, xviii, xix, xx, xxiii; 27 Victoria, 1863, Cap. xcii.

[2] 18 Victoria, Cap. xxxi, 1854.

> "On the expiration of the provisions of the Regulation of Railways Act, 1873, with respect to the Commissioners therein mentioned, there shall be established a new Commission styled the Railway and Canal Commission . . . and consisting of two appointed and three ex officio Commissioners. . . . The two appointed Commissioners . . . shall be appointed on the recommendation of the President of the Board of Trade, and one of them shall be of experience in railway business. . . . The ex officio Commissioner in each case shall be such judge of a superior court as:—(a) in England the Lord Chancellor; and (b) in Scotland the Lord President of the Court of Session; and (c) In Ireland the Lord Chancellor of Ireland may from time to time . . . assign, and such assignment shall be made for a period of not less than five years. . . . Not less than three Commissioners shall attend at the hearing of any case, and the ex officio Commissioner shall preside, and his opinion upon any question which in the opinion of the Commissioners is a question of law shall prevail. . . . No appeal shall lie from the Commissioners upon a question of fact." [1]

The regulatory body created by the Act of 1888 was a body of considerable dignity and power. Besides remodeling the Commission, the Act of 1888 directed the railway companies to prepare a new classification and a new schedule of maximum rates and to submit them to the Board of Trade for approval. The new classification and schedules were to be considered by the Board of Trade and then enacted by Parliament, thus taking the place of the old maxima contained in individual railway charters. The procedure mentioned did not affect the Railway and Canal Commission, but in 1894 Parliament declared that where a railway company increased its rate beyond the level in force on December 31, 1892, it should assume the burden of proving that the increase was reasonable, whether or not the new rate fell within the new maxima established under the Act of 1888. This added to the Commission's authority over facilities and preference a limited jurisdiction over the reasonableness of railway rates.

Board of Trade

Still further regulatory functions were exercised before the war by the Board of Trade, a separate government department mentioned in preceding paragraphs, which regularly compiled railway statistics, entertained applications for permission to construct new lines and transmitted the applications to Parliament in the form of Provisional Orders, prepared reports upon railway accidents, and undertook duties of conciliation and preliminary hearing in the case of disputes arising under the Act of 1854.

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[1] 51 & 52 Victoria. Chap. xxv, 1888.

Entry of England Into the World War

When England entered the World War in August, 1914, there was immediate need for development of national control far beyond that contemplated by the leisurely legislation of the previous seventy years. In order to accomplish this control, the government fell back upon a section of the Regulation of the Forces Act of 1871,[1] which read as follows:

> "When her Majesty, by Order in Council, declare that an emergency has arisen in which it is expedient for the public service that her Majesty's Government should have control over the railroads in the United Kingdom, or any of them, the Secretary of State may, by warrant under his hand, empower any person or persons named in such warrant to take possession in the name or on behalf of her Majesty of any railroad in the United Kingdom, and the plant belonging thereto, or of any part thereof, and may take possession of any plant without taking possession of the railroad itself, and to use the same for her Majesty's service at such times and in such manner as the Secretary of State may direct; and the directors, officers, and servants of such railroad shall obey the directions of the Secretary of State as to the user of such railroad or plant as aforesaid for her Majesty's service."

Assumption of Control Over Private Railroads

Under the authority of the Act of 1871, the government promulgated the necessary Order in Council on August 4, 1914. In order to disturb the existing railroad organization as little as possible, the government did not undertake direct management of the railroads of the country, but exercised its authority through an Executive Committee composed of ten (later twelve) general managers of the principal British railroads acting under the official chairmanship of the president of the Board of Trade. The staff of each individual railroad remained the same and received instructions through the same channels as before.[1] In December, 1916, similar action was taken with respect to Irish railways. An Irish Railway Executive Committee was formed, and the British Railway Executive Committee appointed a sub-committee of its own members to deal with questions mutually affecting the two countries.

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[1] 34 & 35 Victoria, Cap. 86, 1871.

Government Control and Private Operation

The organization of government control set up in Great Britain in August, 1914, was continued without substantial change until December 31, 1919. In detail, the policy was essentially one of private operation. Indeed, the staff of the Railway Executive Committee, as late as the autumn of 1919, consisted only of thirty-one persons, including four messengers and twenty-seven clerks, and even if one takes account of the various sub-committees coöperating with the Central Committee, the staff which was immediately responsible to the central organization remained small.

On the other hand, the fact that the government was in formal possession of the English railway system left it free to direct the controlled companies in all matters of general policy as a matter of right, while it was able at the same time to secure the operation of the 135 railways that it took over as a single system without regard to the possibly conflicting interests of individual lines. This power of unified direction was peculiarly helpful in the distribution and use of railway rolling stock, in the routing of freight traffic, and in matters where public policy demanded curtailment of shippers' or travelers' privileges, as in the case of the reduction in the amount of free luggage allowed passengers during the war or in that of shortening of time given consignees to unload freight cars.[2]

Guarantee of Earnings

Since its exercise of authority affected the revenues of the railways, the government early agreed to compensate the companies for any loss they might sustain. This was, indeed, required by the Act of 1871. In order to afford the companies legitimate protection the government consented to make good the annual amount by which the aggregate net receipts of all railways taken over, for the period during which the government was in possession of them, fell below the aggregate net receipts for the corresponding period of 1913, with the proviso that if the aggregate net receipts for the first half of 1914 were less than for the first half of 1913, the ascertained deficiency was to be reduced in like proportion. This proviso was later eliminated, as we shall see. The sum payable as compensation by the government, together with the net receipts of the railways taken over, was to be distributed among the railway companies in proportion to the net receipts of each company during the period with which comparison was made. Irish railways were dealt with upon this same basis, even to the use of the net receipts of 1913 as a measure of a fair return, although control did not take place in Ireland until January 1, 1917.[1]

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[1] Pratt, "British Railways and the Great War," chap. viii. Out of 181 separate railway and joint committees in the United Kingdom the government assumed possession of 135. The 46 companies omitted were, however, of slight importance, with the single exception of the London Underground Railways. The total mileage of lines taken over was 21,331½; the mileage of lines not taken over was 499½. See Report from the Select Committee on Transport, 1918, pp. xx, xxi, 37. British Sessional Papers, 1918, vol. iv.

[2] Select Committee on Transport, 1918, p. 40, testimony Sir H. Walker. British Sessional Papers, 1918, vol. iv.

Interpretation of Agreements Between Railroads and the British Government

An apparently simple arrangement such as that indicated in the previous paragraph becomes, nevertheless, complicated when applied to a railway system as large and heterogeneous as that of Great Britain. The only actual change in terms occurred when the proviso under which the ascertained deficiency for which the government was liable was to be reduced by a percentage based upon the decline in the aggregate net receipts of 1914 as compared with those of 1913 was eliminated as from January 1, 1915. The ground for this alteration was an agreement by the companies to pay from their own funds 25 per cent of the first war bonus granted by the government to railway employees.

There were, however, questions under the agreement which needed to be made clear. Did the government compensation payments cover the cost of transportation of troops and military supplies? What was meant by net receipts? What was a proper standard of maintenance during the period of government control? Should the railroad companies be paid interest, in addition to the agreed net revenue, on capital expenditures upon works brought into use after December 31, 1912, the revenue from which was additional to the revenue of the standard period? On what basis should the companies be compensated for stores in existence in August, 1914, which were used up during the war period and later replaced at a new and higher cost?[1] These and similar questions were not finally answered until 1921, when a settlement was reached under the reconstruction legislation of that year.

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[1] Pratt, *sup. cit.*, p. 99; Select Committee on Transport, *sup. cit.*, p. 37, testimony Sir H. Walker. The arrangement as to compensation between the English Government and the railways did not rest upon a signed contract or agreement, as in the United States, but upon letters and memoranda.

Extension of Government Guaranty

As early as 1916, the English Government decided to extend the period of the guaranty of railroad net receipts to two years after the termination of the war. This was to provide support while some permanent railroad policy was being discussed and adopted. Public opinion was not yet clear what this policy should be. The president of the Board of Trade appointed in 1917 an Advisory Committee to consider the whole subject, but the conclusions of this committee were never published.

The following year the House of Commons created a Select Committee on Transport, which reported in 1918. The Select Committee heard testimony with respect to canals, harbors, and highway transport as well as with respect to railways, but when it came to positive recommendation, it contented itself with three observations:

1. That the organization of the transport agencies of the country —and particularly of the railways—could not be allowed to return to its pre-war position.

2. That the temporary arrangement for the control of railways and canals during the war would not be satisfactory as a permanent settlement.

3. That unification of the railway system was desirable under suitable safeguards, whether the ownership was in public or in private hands.[2]

Introduction of Bill to Establish Ministry of Ways and Communications

It can scarcely be said that the report of the Select Committee was a convincing document, but in so far as it made positive proposals, it stressed the need of unified administration of the English railway system, and along these lines the government proceeded to advance. There is some reason to believe that the Cabinet favored, in 1919, government ownership and operation. Certainly the Secretary of State for War, Mr. Churchill, stated in a public address that the government had decided upon nationalization, and the statement was not disavowed. On the other hand, the decision, if made, was not carried out in legislation which was presently introduced, and the government officially denied all preconceptions as to what the country's ultimate policy should be. Possibly this was because of the sharp decline in railway earnings that occurred during the first half of 1919 and the generally poor financial condition of railways, canals and harbor undertakings.

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[1] It may be said at this point that all government traffic was carried on free vouchers during the period of government control. This followed the decision that the minimum compensation guaranteed to the railway companies was also a maximum compensation, so that the companies would not have increased their returns by applying current rates to government consignments. Select Committee on Transport, *sup. cit.*, p. 38.

[2] First and Second Reports from the Select Committee on Transport, British Sessional Papers, 1918, vol. iv, p. xii. The work of the Select Committee was done in a very few weeks under high pressure, a fact which explains the general character of its recommendations. 113 H. C. deb. 5th Series, p. 1831, Gilbert.

Transfer of Regulatory Functions to the New Ministry

What happened instead was that the government introduced a bill to establish a Ministry of Ways and Communications. This new Ministry, later called the Ministry of Transport, was to be permanent and was to absorb all powers of government departments relating to (1) railways, light railways, tramways; (2) canals, waterways and inland navigation; (3) roads, bridges, ferries, and vehicles, and traffic thereon; (4) harbors, docks, and piers; and (5) electrical power. The clauses relating to electricity were eliminated during the Parliamentary debate. The most notable of the departments concerned was the Board of Trade, but other departments were the Light Railway Commission, the Local Government Board, the Road Board, the Development Commission acting under the Development and Road Improvement Funds Act, 1909, and certain offices and boards concerned with Scottish and Irish affairs.[1]

The effect of this transfer was to concentrate in the new Ministry all, or nearly all, of the powers of regulation over transport previously vested in government bodies in the United Kingdom, including both railways and other means of inland transport. The authority of the Railway and Canal Commission was not transferred, however, although it was limited, as will hereafter appear.

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[1] Ministry of Ways and Communications. Return "of Summary of Principal Powers and Functions under Statute which may be transferred to the Ministry of Ways and Communciations from other Government Departments." British Sessional Papers, 1919, vol. xlii, No. 58. Ministry of Ways and Communications, Return of the Powers and Duties to be transferred to the Ministry of Ways and Communications from the Board of Trade and Local Government Board. *Ibid.*, 1919, vol. xlii, Cd. 211.

Grant of Power to Assume Possession of Transportation Facilities

Besides intrusting extensive powers of control to the Ministry of Transport on a permanent basis, Parliament made two important temporary grants of power.

1. The Minister was authorized for two years to exercise the powers over railroads possessed by the Board of Trade under the Regulation of the Forces Act of 1871. The effect of this was to continue the government's war powers over railroads during the reconstruction period. It is true that the Railway Executive Committee ceased to function, but government possession continued.

All rates and fares directed by the Minister were to be deemed reasonable so long as Ministerial possession continued, and for a further period which might extend for eighteen months or might terminate earlier if Parliament made fresh provision. This clause was conclusive as to the reasonableness of rates, agreements or statutory limitations notwithstanding, but the Railway and Canal Commission retained jurisdiction, nevertheless, over complaints of undue preference or undue disadvantage or allowances or rebates in relation to the provision of station accommodations or terminal services, and there was a rate committee of five members appointed for the purpose of giving advice and assistance to the Minister with respect to rates and fares.[1]

2. The Minister was empowered, on one month's notice, to take possession of any other statutory railway undertaking, or of any of a list of other enterprises which corresponded essentially to the list over which the Minister exercised permanent regulatory control. This list included light railway or tramway undertakings, canals or inland navigation undertakings, harbor, dock, or pier undertakings, and plant belonging to the undertakings mentioned, including railway wagons, barges, tugs, and other craft.

The important qualifications to the right to take possession were these: first, the right to acquire did not extend to tramways or light railways used as tramways belonging to a local authority; second, the Minister might not take possession of the Manchester Ship Canal or of harbor, dock, or pier undertakings established by Act of Parliament (except when part of a railway undertaking) without the consent of the owners; third, the Minister might not act, when the owners of an undertaking objected to being "possessed," except after reference to an advisory committee provided in the new law; and fourth, the Minister was not empowered to purchase railway cars used for the conveyance of any particular class of traffic unless he purchased all privately owned cars so used. These limitations represent the objections of influential business and governmental groups, but while significant, they left a wide field for ministerial enterprise.

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[1] 117 H. C. deb. 5th Series, 1919, p. 1549.

The powers of the Minister to extend his possession over tramways, light railways, canals, and harbors were to lapse after two years. It was not altogether clear from the wording of the bill whether possession of tramways and canals and docks lapsed, or only the right to take possession. The inference from the language used is that both were intended to lapse. On the other hand, where property such as railway cars was acquired by the government, ownership would of course remain in the government, and the disposition of the equipment would be a matter for Parliament to decide at a later date.

Relation of New Program to Permanent Nationalization

For two years, under the Transport Bill, substantially all of the inland transport facilities of the United Kingdom were to be controlled by a single government department. That this was intended as a step preliminary to nationalization the government, as has been pointed out, denied. In the first place, the control was to stop short of complete management. It is true that the bill required officers and servants of "possessed" undertakings to obey the direction of the Minister with respect to rates, wages, operation, improvements, distribution of rolling stock, and other vital matters. But it was not the Ministry's intention to concern itself with details. Some such organization as that which prevailed during the war was to be continued.[1] It would not be a possible proposition to manage transportation direct from the Ministry with executive powers.[2] Nor was it intended to prejudge the policy which should be adopted after two years' trial of the new régime. The establishment of a Ministry of Transport might affect nationalization, but it would not effect it. The simple fact was that the railways of the country were being worked at a loss. Unless some other remedy were found it would be necessary to advance freight rates 70 or 80 per cent. Ordinary economies would not do. Standardization and elimination of waste on a great scale were necessary. Motor traction, canal navigation, and terminal facilities must be coördinated, and only government authority could get quick and complete results.[1] These expressions, called forth in the course of Parliamentary debate, rallied behind the Ministry Conservative support, without alienating the Labour Party, convinced of the merits of nationalization.

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[1] 113 H. C. deb. 5th Series, 1919, p. 1782, Geddes.

[2] *Ibid.*, p. 1783, Geddes.

Miscellaneous Provisions of Transport Act

In addition to the power to take possession of existing undertakings, the Act gave the Minister power to initiate new transport services, subject to certain limitations. "Possessed" undertakings retained their own revenues as before and paid their own expenses, so no questions of compensation arose except where the directions of the Ministry affected the earnings of the enterprise. Parliament decided that, when such a claim was made, the Railway and Canal Commission should be empowered to determine the financial relations to exist between Minister and company, and a corresponding provision was inserted in the bill.[2]

Policy of Ministry Conservative

The actual procedure under the Ministry of Transport bill was highly conservative. The Ministry did not exercise its power to take possession of all sorts of transport undertakings. It gave no directions with respect to operation. It did not even acquire rolling stock upon a large scale, although the equipment situation in England was unbelievably bad. About half of the freight cars were privately owned, and these private cars were of a poor type, unstandardized, and therefore difficult to repair, small because adapted to the needs of a single undertaking, and expensive to operate because particular wagons had always to be switched out for particular destinations.[3] But on the other hand, the uncertainty of the railway situation and the high cost of replacing private equipment led the government to refuse to start upon a program which might involve the acquisition of 700,000 wagons and the expenditure of large sums for replacement. Sir Eric Geddes declared that English car-builders quoted unreasonable prices in 1919, and preferred to seek temporary relief through repairs, improved handling, and the reimportation of vehicles from France.[4]

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[1] *Ibid.*, pp. 1761–83, Geddes.

[2] 9 & 10 George V, chap. l, 1919.

[3] 117 H. C. deb. 5th Series, p. 1497 ff., 1919, Geddes.

[4] Ministry of Transport, Conference with Members of Parliament. Statement by Sir Eric Geddes. British Sessional Papers, 1919, vol. xxx, Cd. 493.

Advances in Rates

The Ministry was, however, active in revising railroad rates. In October, 1919, it requested the Rates Advisory Committee to consider the question of demurrage rates, free time, the desirability of terminating or modifying the practice of the railways of rendering services in certain cases free or at a nominal charge, and in general, the best means of obtaining increased revenue for the railways to an amount of not less than £45,000,000 (later increased to £50,000,000). The Committee replied in November that demurrage should be doubled, with still further increases beginning the third day after expiration of the free period.[1] The following month it submitted proposals for rate increases ranging from 25 to 100 per cent on different classes of traffic. Only lime, manure, and milk were excepted. Both these and the demurrage proposals were approved by the government.[2] In July, 1920, the government advised the Committee that still further increases were necessary, and the Committee responded with three additional reports, one on passenger fares,[3] one on freight rates,[4] and one on certain special cases where passenger fares lower than ordinary were being charged, or free services were being rendered by railroads to their customers.[5]

Nature of Railway Deficits

The suggestions in these reports were designed to overcome deficits which were being registered, in spite of previous advances, at the rate of £54,500,000 per annum, and to produce a condition of financial equilibrium not later than June, 1921. The Committee's later suggestions were approved as well as its earlier, and were placed in effect at various times up to and including September, 1920. Taken in connection with an elaborate report dated December 22, 1920,[6] in which the Rates Advisory Committee discussed general policies of rate fixing and rate control, they helped to remedy a difficult financial situation, although it must be remembered that the deficits of £45,000,000 or £54,500,000 to which the government referred were not operating deficits, but represented only the expected failure of the railroads to attain in 1920 the earnings level of 1913, upon which the government guaranty was based.[1]

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[1] Report of the Rates Advisory Committee, Recommendation as to Demurrage. British Sessional Papers, 1920, vol. xxiv, Cd. 526.

[2] Ministry of Transport Rates Advisory Committee. Report on the Rate for the Conveyance of Goods, Minerals and Merchandise. British Sessional Papers, 1920, vol. xxiv, Cd. 525.

[3] Ministry of Transport, Report of the Rates Advisory Committee on the Interim Revision of Railway Rates, Tolls, Fares, and Charges. July, 1920. British Sessional Papers, 1920, vol. xxiv, Cd. 857.

[4] *Ibid.*, 1920, Cd. 886.

[5] *Ibid.*, 1921, vol. xvii, Cd. 1148.

[6] Ministry of Transport, Rates Advisory Committee. Report on General Revision of Railway Rates and Charges, 1920. British Sessional Papers, 1920, vol. xxiv, Cd. 1098.

Criticism of the Ministry

In addition to revising rates, the Ministry of Transport undertook an audit of company claims against the government, it secured the introduction of new railway operating statistics such as ton-mile and car-mile figures from which statistics of average car loading could be deduced, and it prepared plans for permanent legislation to become effective when after two years the English Government would be forced to make a new decision on the subject of railway policy.[2]

With respect to the importance of all this work, Mr. Asquith said in 1920:

> "The Ministry of Transport is a new creation, and it has done nothing but lie on its back, contemplate the skies, ruminate over problems, and consider whether or not something might hereafter be done to improve the transport system of this country. This process, carried on by experts, costs us between £400,000 and £500,000 a year. It is a gross, profligate, inexcusable waste of the taxpayers' money." [3]

Against this criticism may be set the fact that much of the routine work of the Ministry represented merely a transfer of activities formerly vested in other departments. Beyond this, the time was a critical one, and the country could afford to pay highly for rumination if this resulted in competent advice on railway liquidation and railway policy.

Change of Government Position on Nationalization

By the middle of 1920, the British Cabinet had reached settled conclusions adverse to permanent State management of British railways. Sir Eric Geddes explained the basis for these conclusions by declaring in the House of Commons that State management was costly, that it lacked initiative and became involved in red tape. Promotion came to depend upon seniority. No important operating improvement and no invention, he said, had ever come out of a state railway. The State would never pay the market price for the best brains. Moreover, politics would corrupt railway management, and railway management would corrupt politics.[1] These considerations persuaded the Cabinet not to recommend national ownership, although the government was still convinced of the importance of enabling the railways to economize and still in sympathy with the recommendations of the Select Committee on Transport, especially on the point that unification of the railway system was desirable, whether in public or in private hands.

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[1] Ministry of Transport, Railway Working Statement showing the Results of Railway Working in the Financial Year 1919–20, together with an Estimate of the Receipts and Expenditures for the Financial Year 1920–21. British Sessional Papers, 1920, vol. xli, Cd. 815.

[2] Ministry of Transport, Estimates, 1920–21. Statement as to Railways, British Sessional Papers, 1920, vol. xli, Cd. 654.

[3] 130 H. C. deb. 5th Series, p. 2429, Geddes. See generally *ibid.*, pp. 2425 ff. for vigorous defense of the Ministry of Transport by the Minister, Sir Eric Geddes.

Railways Act of 1921

Meanwhile, the rapid approach of the close of the two-year period during which the government retained "possession" of the railroads of the United Kingdom made it impossible to delay the formulation of a permanent program, and led to the publication in June or July, 1920, of an official outline of the government's railway policy for the future.[2]

The so-called Railways Bill of 1921 was introduced in the House of Commons on May 11, and finally passed on August 19, 1921. It resembled at many points the American legislation of 1920, although it had its roots in British, not in American, experience.[3]

It is necessary to consider the clauses of the Act of 1921 in some detail, as the present relations between government and railways in the United Kingdom are determined by its provisions.

Consolidation Into Groups

The first principle of the law was consolidation. Unification had been demanded by the Select Committee of 1918. Unification had been stressed in the debates upon the Ministry of Transport Bill in 1919. When Sir Eric Geddes opened the debate upon the second reading of the Railways Bill in May, 1921, he told the House of Commons that the English shipper paid more for railway transportation than shippers anywhere else in the civilized world outside of China. This high rate he attributed to the high cost of operating British railroads, and this, in turn, to a diversity of standards of line which limited the free movement of rolling stock and locomotives throughout the country. Although, therefore, the government had set its face against nationalization, it now undertook to enforce coöperation by allocating the railway mileage of the country into four groups and by providing that the railway companies in each group should merge, on an agreed basis if they could and upon terms prescribed by a government tribunal if they could not. In the former cases proposals were to be submitted for government approval not later than January 1, 1923. The details of consolidation under these paragraphs have already been discussed in Chapter XXIV. Sir Eric Geddes thought that consolidation might save the country £25,000,000 annually in the course of a few years time.[1]

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[1] 130 H. C. deb. 5th Series, 1920, p. 2455.

[2] Ministry of Transport, Outline of Proposals as to the Future Organization of Transport Undertakings in Great Britain and their Relation to the State. British Sessional Papers, 1920, vol. xli, Cd. 787.

[3] Railways Act, 1921. 11 & 12 George V, chap. lv.

Amalgamation Tribunal

Inasmuch as the English consolidations were compulsory, an important feature of the Act was the creation of an Amalgamation Tribunal of three members. This tribunal had no power to determine the distribution of railroads among the different groups, as the allocation was prescribed in the Act, but it had jurisdiction over the terms and conditions on which consolidation was to take place. The tribunal was directed in this connection to take into consideration all the circumstances of the case "and in particular, the value on a net revenue-earning basis of each of the constituent and subsidiary companies as a separate company, and its value as a component part of the amalgamated company"; but economies or accretions of traffic accruing to a company as a result of the provisions of the Act were not to be taken into account.

The decisions of the tribunal were subject to appeal to the courts on questions of law. It was a temporary body, to continue in existence only until its functions were discharged. The life of the tribunal was not expected to exceed two years.[2]

After the passing of the Act, no constituent or amalgamated company might enter into agreement with a constituent company in another group or with another amalgamated company without the consent of the Minister of Transport.

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[1] 142 H. C. deb. 5th Series, 1921, p. 353, Geddes.

[2] Ministry of Transport, Railways Bill, 1921. Memorandum on Financial Resolution. British Sessional Papers, 1921, vol. xxx, Cd. 1322.

Organization of Rates Tribunal

The substitution of four great private companies for the government in railway operation made it necessary for Parliament to erect certain tribunals for the protection of the public interest. The first and most important of these was the Rates Tribunal.

The Rates Tribunal established by the Act of 1921 consisted of three permanent and two temporary members. The three permanent members were appointed by the King upon the joint recommendation of the Lord Chancellor, the president of the Board of Trade, and the Minister of Transport. Their term of office was seven years. Of the permanent members of the Rates Tribunal, one was to be a person of experience in commercial affairs, one a person of experience in railway business, and one an experienced lawyer. The two temporary members were to be added to the Tribunal for the purposes of a particular case on request of the Rates Tribunal or on direction of the Minister. They were to be chosen, in each instance, one from each of two large panels—one panel representing trading, labor and agricultural interests, the other panel representing the railways.

Jurisdiction of Rates Tribunal

The Rates Tribunal of three or five members so constituted was to have jurisdiction over rates and classification. The procedure provided in the Act, however, strikes an observer familiar with American practice as peculiar. The initial classification of merchandise was to be determined, not by the Rates Tribunal, but by the Rates Advisory Committee originally appointed under the Ministry of Transport Act of 1919 and continued for a limited time for this and other purposes. Subsequent changes in classification, however, required the approval of the Tribunal.[1]

The classifications once established, the constituent companies in each of the four railway groups were to submit a schedule of standard rates to the tribunal for its approval. This schedule, when approved, was subsequently to be observed except that lower rates, known as "exceptional charges" might be applied provided that they were not less than 5 or more than 40 per cent below the standard rates, and provided that the Minister of Transport or other persons interested might secure consideration of the new rates by the Rates Tribunal under certain circumstances.

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[1] Ministry of Transport, Railways Bill, 1921. Memorandum on Financial Resolution. British Sessional Papers, 1921, vol. xxx, Cd. 1322.

The charges fixed in the first instance for each amalgamated company were to be so calculated as to yield an annual net revenue equivalent to the aggregate net revenues of the amalgamating companies in the year 1913, together with a fair return upon subsequent capital expenditures and the Rates Tribunal was to review the standard and exceptional rates annually. If the charges proved on such review to be yielding less than the stipulated amount, the tribunal might raise rates so as to enable each company to earn the standard revenue; if the charges yielded an excess, then the Tribunal was to modify rates so as to effect a reduction of the net revenue of each or any company in subsequent years to an extent equivalent to 80 per cent of such excess.[1]

Pending the approval of a schedule of standard rates the railway companies were entitled to make such charges as were in force on the 15th day of August, 1921, subject to the right of traders to apply to the Rates Tribunal for a reduction in these rates, or of railway companies to ask for their increase.

Railway and Canal Commission

The Railway and Canal Commission created under the Act of 1888 remained unchanged under the Act of 1921, except as its authority was limited by the jurisdiction of the new Rates Tribunal. Inasmuch as the last-named body assumed control over the level of railroad rates in the United Kingdom, the principal functions left to the Commission were those relating to reasonable facilities and discrimination in rates. Under the second head, it could adjudicate complaints involving the relationship of rates between different persons and different places; under the first, it could require railway companies to afford reasonable service. It even exercised some power of review over the acts of the Minister of Transport, to the extent that orders of the Minister looking to standardization of railway plant and equipment or to the coöperative or common use of plant and rolling stock were not enforceable against a company when the Commission decided that the necessary expenditures could not be made without prejudicially affecting the interests of the stockholders of that company.

The sum of these qualifications amounted to a considerable reduction in the prestige and power of the Commission, but the shipping interests criticized the Commission on the ground that its membership had become entirely legal[1] instead of partly legal and partly railway and commercial, as originally intended, and the railways did not defend it. Moreover, the task of fixing a new scale of standard charges, together with other new duties imposed by the Railway Act, was believed to be too onerous for a body with part-time members to undertake. The Railway and Canal Commission retained, however, its jurisdiction over canals, together with responsibilities under the Telegraphs Acts, the Electricity Supply Act, the Railway Companies (Accounts and Returns) Act, and some other legislation.[2]

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[1] The figures of 80 per cent and 20 per cent were then used in calculating the Excess Profits duty. The idea was to leave the railroads some incentive to efficiency. 145 H. C. deb. 5th Series, 1921, p. 1282, Geddes.

Negotiations with Respect to Wage Boards

The labor clauses of the Railways Bill were gradually shaped between 1919 and 1921. Under the Ministry of Transport Act of 1919, the workers had been allotted places upon various advisory committees with which the Minister was to consult on certain matters. The most important of these was the Advisory Committee of sixteen, which was set up in or about January, 1920, when the Railway Executive Committee of war-time fame ceased to exist.

In the course of discussions that followed the general railroad strike of 1919, the Ministry of Transport not only agreed to allot four places on the above-mentioned Advisory Committee of sixteen to labor representatives, but it also set up two boards, one called the "Central Board" and composed of five railway managers and five users of railways, and one called the "National Wage Board" and composed of four railway managers, four railway workers (or their representatives), four users of railways, and an independent chairman appointed by the government. It was agreed at the same time that local committees should be created to which matters not of national importance might be referred.[3]

Disputes relating to wages and conditions of work which the local committees could not settle might be referred by either party to the Central Wages Board, and then, failing decision, to the National Wages Board. It was agreed by the unions that no strikes should take place on account of a dispute involving wages or working conditions until 28 days after the question had been referred to the National Wages Board. These Boards were not statutory, but they were active and proved popular.

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[1] 142 H. C. deb. 5th Series, 1921, p. 401, Marshall Stevens.

[2] Ministry of Transport, Memorandum on Railways Bill. British Sessional Papers, 1921, vol. xxx, Cd. 1292.

[3] 122 H. C. deb. 5th Series, 1919, pp. 887–888.

Labor Provisions of the Act of 1921

When the government addressed itself to the legislation of 1921, it appreciated the fact that advisory committees would disappear with government railway direction, and with them the labor representatives contemplated in the Ministry of Transport Act. In order to recreate this representation, the Outline of Proposals for the Future Organization of Transport Undertakings in Great Britain proposed to place workmen directors upon the boards of the new consolidated railway companies that formed part of the government program. The railway companies resisted this, and, somewhat to the government's surprise, the railway workmen were also disinclined to agree to it. So long as the railway system remained in public hands, they were ready to share with Parliament the responsibility of control and management, but they believed that the position of representative employees on boards of directors which were running railways primarily for dividends would be untenable.[1] Instead of this, representatives of the men agreed with representatives of the railway companies at a meeting on May 3, 1921, to recommend the continuance of the local councils and of the Central and National Wages Boards with certain extensions of jurisdiction,[2] and this decision was incorporated in the Railways Act. The Central Wages Board was now, however, enlarged to sixteen members, eight appointed by the railway companies and eight selected by the railway trade unions, and the National Wages Board was enlarged to seventeen, including six representatives of the railway companies, six representatives appointed by the railway trade unions, four representatives appointed by users of the railways, and an independent chairman.

The term "users of the railways" was not defined in the Act. Members of this group consist, however, at present, of representatives of the Trade Union General Council, of the Co-operative Union, of the Association of British Chambers of Commerce, and of the Federation of British Industries. This was also, substantially, the distribution in 1920. Two of the delegates chosen by "users of the railways" normally represent the laborers' and two the employers' point of view, so that for practical purposes the Board is divided eight and eight, with an impartial chairman. It may be added that the personnel of the National Wages Board is determined afresh for each dispute, but that in practice there is considerable continuity of membership.

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[1] 142 H. C. deb 5th Series, 1921, p. 452, Scott; *Ibid.*, p. 653, Wilson; pp. 710–711, Henderson.

[2] Ministry of Transport, Memorandum on Railways Bill. British Sessional Papers. 1921, vol. xxx, Cd. 1292. The railway companies were not, however, unanimous, 142 H. C. deb. 5th Series, 1921, p. 395, Sir F. Banbury.

Claims of Railway Companies Against the Government

It will be recalled that the government agreed, when it took over the British railways on August 5, 1914, to make good the amount by which the aggregate net receipts of all railways taken over fell below the aggregate net receipts for the year 1913. This agreement was embodied in a brief memorandum prepared by the Railway Executive Committee and accepted by the government on August 6, 1914, subject to a proviso that if the aggregate net receipts for the first half of the year 1914 were less than the aggregate net receipts for the first half of the year 1913, the obligation of the government should be reduced in like proportion. This agreement was modified by the later elimination of the proviso, by the issue of supplementary clauses in 1915, and by an undertaking by the government in 1916 to extend its application for two years after the termination of the war. The undertaking just mentioned was itself altered by the Ministry of Transport Act of 1919, which obligated the government to retain possession of the railways for a period of two years from the passing of the Act "on the same terms as to compensation as those heretofore in force." This was regarded as a fulfillment of the engagement of 1916.

These changes mentioned, though of some substance, were in the nature of interpretations of or elaborations upon the terms of the original agreement, the main features of which were never changed, and the same can be said of other definitions and interpretations issued at various times, sometimes with the approval of the Board of Trade and of the Treasury, sometimes with the authority of the Government Accountants, and sometimes even with the authority of the Railway Executive Committee alone. The relations between the government and the railway companies were, however, the subject of careful study by the Ministry of Transport established in 1919, and they were finally the occasion of a report by a committee appointed by Sir Eric Geddes on September 24, 1920, which sat under the chairmanship of Lord Colwyn and was therefore known as the Colwyn Committee.[1]

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[1] Ministry of Transport, Departmental Committee on Railway Agreements, Reports and Appendices. British Sessional Papers, 1921, vol. xvii, Cd. 1132.

This short statement will make intelligible the clauses of the Act of 1921 regarding railway compensation. Briefly summarized, they required the Minister to pay to the railways the sum of £60,000,000, in two equal installments, in full discharge of all claims which might otherwise be made by any railway company in Great Britain for compensation under the Acts of 1871 or 1919. The £60,000,000 was not understood to represent the entire cost to the government of its guaranties, for large sums had already been paid,[1] but it did undertake to cover the balance due on account of the difference between actual earnings and the standard revenue of 1913, together with allowance for arrears of maintenance, abnormal wear and tear during the period of possession, the cost of replacing stores used during government control, and any and all other items which the government might be called upon to make good. Railway claims under these various categories had been estimated by the Colwyn Committee at, possibly £150,000,000.

The distribution of the £60,000,000 between individual companies was to be determined by agreement among the companies, or, failing agreement, by the Amalgamation Tribunal, although some general directions for allocation were contained in the Act. Once accomplished, the finances of the state and of the railway companies were entirely disentangled—a result which was not the least of the accomplishments of the Act of 1921.

Results of Amalgamation

Since 1921 the new machinery of control has functioned reasonably well in Great Britain, in spite of serious difficulties arising out of the general economic situation.

So far as amalgamation is concerned, the program of the law of 1921 has been substantially accomplished. The railway mileage of the country, with unimportant exceptions, is now embraced in the four great systems already described in Chapter XXIV. While there are a few additional adjustments to be expected, these are of a minor character, and the present distribution of mileage may be regarded as permanent. This reorganization of systems has been carried through, in most instances, by voluntary action of the companies concerned. The Amalgamation Tribunal, that is to say, has generally been able to approve completed agreements, and only occasionally has been obliged to render judgments in contested cases in which the parties have disagreed either as to the lines to be included in an enlarged system or as to the terms upon which new companies were to absorb the old. There is a striking difference between this rapid and non-contentious process of consolidation under the English Act, and the slow progress of voluntary consolidation in the United States. The contrast is doubtless to be explained by the fact that the English Tribunal has authority which can be exercised if necessary, and also by the circumstance that English railways had gone further in the direction of regional agreements and understandings before 1921 than had railways in this country, so that the zones of influence of the major systems were better understood.

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[1] See Chapter XXVII for total figures. Out of £60,000,000, £9,000,000 was expected to return to the government in the way of income tax.

Experience has shown that amalgamation produces some economies. The sources of saving are stated to be: (1) the abolition of redundant and duplicate positions; (2) altered methods of train-working, elimination of duplicate services, and discontinuance of exchange arrangements; (3) partial measures of standardization of permanent way, rolling stock, and appliances within the groups.

On the other hand, the amount of saving has been moderate. The companies have found themselves compelled to measure the gains secured by consolidation, for the reason that the law of 1921 directs the Rates Tribunal to enlarge the standard return by not more than one-third of the economies effected by or in anticipation of amalgamation. The greater the economies which the companies can show, the more they are to be allowed to earn, and there is thus a practical reason for studying the effects of the law upon the cost of operating railway systems. Yet in spite of the incentive offered by the clauses of the Act of 1921 with reference to the standard return, the railways have been able to demonstrate an annual saving of only £1,700,000.[1] Sir Eric Geddes' estimate of £25,000,000 has not yet been approached. It should be said, however, that it is difficult to speak with assurance regarding savings through consolidation in England, because of the disturbing effects of general economic conditions since the World War.

Work of the Rates Tribunal

Up to the present time the work of the Rates Tribunal has been preliminary to the establishment of a standard schedule of charges for the British railways. The Tribunal has determined, at least approximately, the gross revenue to be earned by each amalgamated company under the Act of 1921. With respect to the rates calculated to produce this revenue, progress has also been made. The railways submitted schedules contemplated by the Act in the course of the year 1923. The Rates Tribunal heard objections to these schedules, and has embodied the results of its deliberations in a final order, issued July 6, 1927, and effective January 1, 1928. The differences of opinion which it has had to resolve have required the interpretation of the language of the Act, and the inclusion or exclusion from railway accounts of items of revenue or expense that may affect the standard revenue, as well as an estimate of the earnings to be derived from proposed rates, and attention to changes in rates which may alter the relative burden imposed upon different classes of traffic or traffic from different localities.[1] Such problems need time for their solution, so that it is not surprising that final schedules have been long delayed.

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[1] Proceedings of the Rates Tribunal. Schedule of Standard Charges. Judgment dated 6th April, 1926.

Standard Rates and Charges Order

The standard basis of goods and mineral rates set in the order of July, 1927, were 60 per cent above the base rates prevailing January 14, 1920, and this was approximately the level of rates actually being charged when the order was issued, so that no great change in transportation prices was involved. The standard passenger rates were fixed at 2 1/2d. (5 cents) a mile first-class, and 1 1/2d. (3 cents) a mile third class, also about the customary price. These freight and passenger charges should, normally, yield the standard revenue, but in practice they will not, as the Tribunal has authorized concessions or reductions in rates below the general level on coal, iron and steel, tin plate, fertilizers, agricultural machinery, and on some other articles. This will reduce railroad receipts by something like £2,613,000, and similar concessions with reference to season tickets and workmen's fares are expected to cost in the neighborhood of £3,000,000 more. To this extent the companies will still fail to earn the gross return approved by the Tribunal itself. While net revenues will decline less than gross, they will also, of course, be appreciably reduced.

In addition to considering standard charges, the Rates Tribunal has approved certain regulations for the addressing and packing of merchandise, and it has fixed, in part, standard terms and conditions of carriage comparable with those contained in the American bill of lading or the Pomerene bill of lading Act. Discussion of proposed rates over circuitous routes, and the hearing of a comparatively small number of complaints with respect to rates authorized to be charged pending the adoption of the new standard schedules, have occupied the balance of the Tribunal's time.

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[1] See especially Proceedings of the Railway Rates Tribunal, Schedules of Standard Charges. Judgment dated 30th December, 1926.

Labor Boards Under the Railways Act of 1921

Finally, the Central and National Wages Boards contemplated by the Act of 1921 have been set up, and have rendered a limited number of decisions. Of the two, the inferior, or Central Wages Board, has developed a highly informal and direct way of transacting business. The sessions of the Central Wages Board are private, discussions are not stenographically reported, decisions are made before each conference breaks up, and reports are circulated only among the parties interested. This rapid and intimate handling of labor disputes has proved well adapted to the disposition of minor cases involving the interpretation and application of established agreements. It is estimated that not more than 25 per cent of such cases are appealed.

When questions of principle are involved, the action of the Central Wages Board has been much less final and important. In fact, the presentation of such disputes to the Board amounts to little more than a registration of the controversy, for no witnesses are called, and appeal to the National Wages Board always takes place. It is mainly in disposing of cases of this type that the National Wages Board has proved useful, although a certain proportion of the minor disputes have also reached the final Tribunal.

During the past seven years all major railroad controversies are said to have reached the National Wages Board by reference of one party or the other. These litigations have been few in number: one in 1920, one in 1921, one in 1923, and one in 1925. The railroad strike of 1926 in sympathy with the miners did not arise out of a dispute between the railroad companies and their employees, so that the machinery of the Railways Act could not be applied in this case. In most instances the Board's decision has been rendered within the statutory twenty-eight days, and in every instance but one the decision has been accepted by the parties. The exception was in the case of a Board decision in 1923. The Board at this time ordered certain reductions in wages which caused the Associated Societies of Locomotive Engineers and Firemen to go on strike —an action in which the National Union of Railwaymen did not join and which ultimately proved unsuccessful.

Procedure before the two English wage tribunals is inexpensive, and the results have apparently satisfied both parties. Doubtless this gratifying outcome has been due to the high character of the leaders upon both sides of English railway labor disputes as well as to the nature of the machinery which they administer, but it offers in any case an interesting contrast to conditions in the United States under the régime of the United States Labor Board.

Decline in Earnings of British Railways

The gravest problems of British railways since the war have related rather to finance than to control. The volume of railway traffic has steadily declined in England since 1923, when the tonnage of goods and minerals hauled was 343 million tons. In 1924 the corresponding figure was 335 million tons, in 1925 it was 316 million tons, and in 1926 the general strike and the more prolonged coal strike brought British railway tonnage down to 216 million tons, or a loss of more than one-third of the freight traffic of the country in three years. Passenger traffic has also fallen off between 1923 and 1926, although not to the same extent as freight. A movement of this character naturally affects earnings, and, in fact, the gross and net earnings of British railways during the past six years have been as follows:

GROSS AND NET EARNINGS OF BRITISH RAILWAYS, 1921–26

Year	Gross receipts £	Net receipts £
1921	236,311.675	Def. 9,844,662
1922	238,223,754	47,148,809
1923	224,443,148	42,914,500
1924	221,929,741	39,004,200
1925	217,744,361	36,735,847
1926	188,294,577	19,159,427

The above table shows that there has been a steady and continuous decline in both the gross and the net earnings of British railways since 1922, reaching a climax in 1926 with the collapse in traffic of that year. In 1922 and 1923 the railways voluntarily reduced their freight rates in the hope of stimulating business, but without apparent result except to sacrifice some revenue that might otherwise have been secured.

Advance in Rates, 1927

Nothing in the amalgamation or rate sections of the Railways Act has enabled the railways to meet the adverse conditions forced upon them by the general economic situation. Effective February 1, 1927, however, the railways increased their rates about 6 2/3 per cent, bringing them from a level of about 150 to one of about 160 per cent of pre-war charges.[1] It was possible to do this without the consent of the Rates Tribunal, because a recent decision of the House of Lords in the case of Tate and Lyle *v.* Railway Companies holds that, pending the adoption of the standard schedule of charges contemplated by the Railways Act of 1921, and without prejudice to the authority of the Tribunal to fix rates in particular cases, railroads may increase their charges up to the level in force on August 15, 1921, without receiving prior government approval.

The fact deserves mention that customary dividends upon British railway stocks were paid until 1925 in spite of the decline in gross and net receipts. In 1925 slight reductions were made in dividend rates by some of the companies, to be followed by more drastic cuts in 1926 and 1927. The dividends paid after 1922 were, however, only made possible by economies in maintenance, by the depletion of reserves, and, it is suspected, by the use of the £60,000,000 received from the Government in liquidation of its obligations to the companies. The result of the English dividend policy has been, of course, to conceal the railway position temporarily, and in the end to place the companies in an even more dangerous position than their statistics of earnings indicate.

There is some question whether railway rates can be again and largely raised in Great Britain, in view of the progress of motor transport, and of the depressing effect which higher charges will have upon particular trades. Railway managers hope that further advances will not be necessary, although no one can predict what the future will bring.

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[1] The reasons for this increase are summarized in the *London Times* for January 14, 1927.

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CHAPTER XXXI

THE RELATIONS BETWEEN THE PUBLIC AND THE RAILWAYS IN FRANCE

Relation of the Government to Railroad Construction Under the Act of 1842

In presenting to Parliament the bill which ultimately became the law of 1842, the French Minister of Public Works proposed to call upon local governmental units for two-thirds of the cost of the right of way for the railroads that were presently to be built, while it undertook, itself, to pay the remaining third of the cost of the right of way as well as to meet the cost of grading, structures, and stations.[1] The property so constructed was to be leased to companies financed by private capital, which were to supply rails, ties, and equipment, and to operate at their own expense. The lease was to state the length of the period for which it was made, and the conditions of operation, as well as the maximum rates; it was to be approved by the Minister of Public Works, provisorily, and finally to receive sanction by law. At the expiration of the lease, the value of the property contributed by private capital was to be determined by expert appraisal and to be reimbursed to the companies which had advanced it, either by new companies that might take over the leases or by the state.[2] These were the actual provisions of the Act of 1842, and, except that the practice of requiring local government units to bear a share of the expense of railroad rights of way was soon abandoned, this remains the general basis upon which French railroads are built and operated at the present time.

Development of the Great Companies and of the State System

During the early years of railroad development, the government granted a right to build to almost any private company which was willing to undertake a part of the national railroad program announced in 1842. The result was that by the end of 1851 the French railroad system of 3,627 kilometers was divided among no less than eighteen companies, of which nine were of considerable importance.[3]

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[1] Schlemmer, G., and Bonneau, H., *Recueil de documents relatifs à l'histoire parlementaire des chemins de fer français*, 1898, p. 87.

[2] *Ibid.*, pp. 114–115; La Ruelle, *Contrôle des chemins de fer et des tramways*, pp. 469–470.

[3] Kaufmann, *Die Eisenbahnpolitik Frankreichs*, p. 91.

In 1852, the Second Empire altered this procedure. The government now began to fuse existing enterprises and to concentrate new concessions so as to build up a few great companies. These new large and powerful undertakings were expected, on their part, to develop allotted territories in a systematic way. Thus the Northern Railway was charged with communication between Paris and England and Belgium; the Paris-Lyon-Mediterranean, with traffic between Paris, Switzerland, Italy, and Mediterranean ports; and other companies with other sections. This policy soon produced results. By 1858, 8,292 kilometers out of a total of 8,767 kilometers of railroad lines actually in operation in France were in the hands of six great companies, namely,[1] the Northern, Eastern, Western, Orléans, Midi, and Paris-Lyon-Mediterranean Railway Companies.

To these companies presently came to be added a state system, made up of small lines in the southwest of France, which the state had authorized independent companies to build because the great systems would not undertake them, and which the state was forced to buy, mostly between 1877 and 1883, because they could not operate at a profit.

Legal Basis of Government Control in France

Government control of railroads is based in part upon general statutes passed in 1842 and 1845, in part upon ordinances and decrees elaborating the provisions of underlying statutes, in part upon charter clauses imposing responsibilities upon private railway companies, and in part upon conventions or contracts between railways and the government, of which the conventions of 1859, 1883, and 1921 are the most important. While it is impossible, in reasonable space, to state the provisions of these various documents, it may be said that the result of this combination of general law, charter, and contract has been to vest in the French Government power to control railway operations in minute detail. No new railroad can now be built except after parliamentary authorization. New rolling stock must receive the approval of the Minister of Public Works.[2] The Minister approves train schedules and the maximum and minimum speed of trains. He may require modifications in signal systems, lay down rules for the carriage of explosives, and pass upon the provisions for the heating of trains. He may demand additions to equipment or to personnel when necessary for satisfactory service.

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[1] *Ibid.*, p. 67.

[2] Ordonnance du 15 novembre, 1846, modifiée par le decrêt du 1^er^ mars, 1901, Titre II.

He regulates the length of the railroad working day. He may prescribe standards of maintenance. No rates or fares may be changed without the Minister's prior approval, even though beneath the charter maxima. No bonds may be issued without his approval. In short, through the exercise of these and many other powers, the Minister exercises authority that goes far beyond the prerogatives of government in England or in the United States. This explains the absence of anything like the Anglo-Saxon "railroad commission" in France, as well as the failure of the French Parliament to enact broad regulatory statutes analogous to the Act to Regulate Commerce in this country or to the Railway and Canal Traffic Act in Great Britain.[1]

Organization of Control

In order to perform the functions of his office, the Minister of Public Works requires an elaborate organization, including, up to 1921, two advisory committees, the *Comité consultatif* and the *Comité de l'exploitation technique;* a general executive officer, known as the *Directeur des chemins de fer,* with a headquarters staff; subordinate executives, each in charge of control upon some one private railroad system; and a considerable number of engineers, inspectors, etc., who report on each system to the executive in charge of control upon that system. The organization is elaborate and expensive, but it is presumably necessary to enable the Minister to meet his responsibilities. The organization of the advisory committees was changed in 1921, but the railroad director and the system control was left as before.

Guaranty of Interest

We now come to that phase of the relations between the French Government and the French private railroads which has caused most controversy, namely, that of the guaranty of interest.

The disadvantages of a system of interest or dividend guaranty are obvious. In the first place, it is expensive. In the second place, it may remove the incentive to efficient operation. On the other hand, the policy of a guaranty has peculiar advantages. Unlike the loans or subsidies granted by many American states, it extends assistance only to completed enterprises. Moreover, it measures the aid given exactly to the need. And, lastly, the mere existence of a guaranty enhances the credit of the enterprise to which the guaranty is given, and sometimes, therefore, enables a private company to extricate itself from difficulties without actual money contributions from the state treasury.

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[1] La Ruelle, *Contrôle des chemins de fer et des tramways*, pp. 51 ff.

The French Parliament approved a guaranty of interest on behalf of the railroad from Paris to Orléans as early as 1840.[1] The general adoption of the practice did not come, however, until 1859, when a policy of expansion upon which the private companies had somewhat rashly entered, not without pressure from the state, brought them to the verge of bankruptcy, and led to the inauguration of an extensive system of government support.

Railroad Construction by the French Government

It was not the arrangement of 1859, however, but a series of later conventions in 1883 that were destined to control the relations of private railroads and the French Government until the outbreak of the World War in 1914, and it is only the conventions of 1883 which will be considered in the text. The reason for the substitution of the contracts of 1883 for those of 1859 is to be found in the fact that between 1876 and 1883 the French Government had committed itself to a program of government railroad construction in France independently of the private companies. Both the extent and the cost of the program which Minister de Freycinet persuaded the French Parliament to indorse between 1876 and 1878 were underestimated at the beginning by those in charge, so that by 1882 the government sought opportunity to lighten the burden it was carrying by transferring to private enterprises the task of completing projects that it was unwilling to abandon but which it was unable to finance.

Conventions of 1883

Under the conditions which have been alluded to, the government negotiated, in 1883, a new set of agreements with the principal French railway companies that superseded the conventions of 1859.

The main features of the new contracts were as follows:

1. The six great private systems, which were the Northern, the Eastern, the Western, the Orléans, the Paris-Lyon-Mediterranean, and the Midi railroads, undertook the completion of and accepted the duty of operating the new mileage which the state had promised to install. The companies agreed to find the money and to bear themselves a portion of the expense, which varied as between the different systems but amounted to between one-quarter and one-

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[1] Schlemmer, G., and Ronneau, H., *Receuil de documents*, *sup. cit.*, pp. 59–77.

fifth of the whole. The rest of the outlay was ultimately to be repaid to the companies by the government,[1] although the state advances under the conventions of 1859 were to be credited on this repayment.

2. The conditions under which the state might buy in the property of private companies were somewhat modified. The process of repurchase up to 1883 had been controlled by a uniform provision in the charters of all the great companies. Briefly stated, the state was to pay, in case of repurchase: (a) an annuity extending to the termination of the concession of the purchased company which should be equal to the average earnings of such company for the best five of the seven years preceding repurchase; and (b) a principal sum for rolling stock, shop and station equipment, supplies, fuel, etc., determined by expert valuation. Through the conventions of 1883 the state agreed to value railroads which had operated for less than fifteen years on the basis of original cost, if the companies should demand it, instead of on the basis of earnings. It also undertook to compensate the companies, on request, for their so-called "complementary expenditures," not including rolling stock, on the basis of original cost instead of upon the basis of expert valuation, with the proviso that one-fifteenth should be struck off the figure of cost for each year elapsed after the end of the fiscal year in which the expenditures were made. These changes were expected to increase somewhat the sums which the companies would receive.

Revision of the System of Guaranties

3. Under the system of guaranties approved in 1883, each railroad party to the agreement was allowed to deduct from its gross revenues the sum necessary to meet operating expenses, interest, amortization and accessory charges for capital expenditures. In addition to this, each system was permitted to charge to revenues a minimum dividend, which varied according to the individual company. If the net operating revenues were not sufficient to cover this last charge, the state advanced the difference. State advances were treated as loans, they bore 4 per cent interest, and they were repayable at the expiration of the companies' concessions, if necessary, by deduction from the sums due from the state at this time on account of the repurchase of rolling stock. If the net operating revenues were more than sufficient to cover interest, amortization, and mini-

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[1] Most of the repayment was to come from the national treasury. A small part, less than 2 per cent, was chargeable to departments, communes, etc.

mum dividend, then the surplus was to be used to repay state advances under the guaranty for earlier years, if such there were, after which the surplus might be used to increase dividends up to a certain point. Beyond this last-named point excess earnings were to be divided between companies and state in the proportions of one-third and two-thirds, respectively.

The period of the guaranty was not always the same. That of the Northern and Paris-Lyon-Mediterranean railroads terminated in 1914, that of the Eastern on December 31, 1934, and that of the Western Railway Company on December 31, 1935. No mention was made in the treaties with the Orléans and the Midi of the length of the guaranty, but a later decision by the Council of State held that the guaranty was to be considered for the same term as the franchises of the companies—that is to say, to the end of 1956 and of 1960.

Unpopularity of the Conventions of 1883

The railroad conventions of 1883 were long unpopular in France, partly, doubtless, owing to the feeling that they were negotiated under pressure. They did not entirely relieve the state from the burden of railroad operation, for the government retained for itself a small system of badly located lines southwest of Paris, and they compelled the treasury to provide subsidies which by 1908 had reached the very substantial sum of 1,207,451,601 francs. Indeed, the deficits of the Western Railroad became so formidable in course of time that in 1909 the government exercised its option of repurchase, preferring to operate the Western Railroad Company itself, and adding it to the mileage that it already possessed. On the other hand, the general system was not ill conceived, it probably has had the effect of reducing French railroad rates, and if the dividends which railroad shareholders have received in France have been high, nevertheless the support of the state has so strengthened the credit of the private companies that they have been able to provide four-fifths of their capital requirements through the sale of bonds. Moreover, this result is not at the expense of the taxpayer, as the state advances up to 1914 are secured by rolling stock of the private companies valued at amounts which substantially exceed the government loan.

Guaranty-of-interest Account as of December 31, 1913

When the World War broke out in August, 1914, the financial situation of the private railroad systems in France was comparatively easy. The guaranty-of-interest account, under the conventions of 1883, stood as follows on the 31st of December, 1913:

Company	Advances by the State (Francs)
Eastern	259,676.67
Orléans	312,087,880.77
Midi	340,896,195.91
Total	653,243,753.35

Of the five private companies, the Northern Railway had never called upon the state for assistance, and the Paris-Lyon-Mediterranean had repaid, before 1900, the advances which it had received. Even the Eastern Railroad, shown above as indebted on account of the guaranty to the extent of 259,676.67 francs, cleared the last of its indebtedness to the state at the beginning of July, 1914. Only the Orléans and the Midi were substantially in arrears, and the government advances to these lines were secured by the value of their rolling stock.[1]

Guaranty-of-interest Account as of December 31, 1919

By the end of 1919, however, this fortunate condition had completely changed. On the 31st of December, 1919, the guaranty-of-interest account for the private companies was as follows:

Company	Advances by the State (Francs)
Northern	14,338,191.78
Eastern	475,920,179.81
Orléans	553,210,550.47
Paris-Lyon-Mediterranean	36,509,194.52
Midi	516,257,900.24
Total	1,596,236,016.82

The total state advances under the guaranty rose, between December 31, 1913, and December 31, 1919, from 653 million francs to 1,596 million francs, or almost threefold.

Capitalization of Deficits by Northern and Paris-Lyon-Mediterranean Railway Companies

Nor was this all. The right of the Northern and Paris-Lyon-Mediterranean railroads to assistance terminated under the terms of the conventions of 1883 upon August 31, 1914. For their dividends after this date the state was in no wise responsible. There were, nevertheless, matters of equity as well as of public policy to be considered. The deficits of the Northern and of the Paris-Lyon-Mediterranean after 1913 were clearly due to the war. The companies were subject to complete state control during the war, and, after the Armistice, they were subject to a burdensome system of priorities,[1] and exposed to the effects of increases in wages and prices which they were forbidden to meet by advances in rates. That this entitled both the Northern and the Paris-Lyon-Mediterranean to equitable consideration was recognized by the Act of December, 1914, which allowed the two companies mentioned to charge their deficits to capital account and to cover them by the issue of obligations that the government was eventually to redeem, for the period of the war and beyond up to the close of the year following the cessation of hostilities.

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[1] *Journal Officiel*, Débats Parlementaires, Chambre, 1920: 3, p. 3496, Lorin; *Ibid.*, Documents Parlementaires, Chambre, 1920: 2, Annexe No. 862, Exposé des Motifs, p. 1450.

The deficits carried to capital account under the permissive legislation of 1914 were 984,223,294.34 francs for the Northern and 697,417,616.94 francs for the Paris-Lyon-Mediterranean, which sums, added to the advances allowed the Orléans, Midi, and Eastern Railraods, made a total of over three billion francs, an increase in the course of six years of 2,624,633,174.75 francs, or more than four times the advances by the French Treasury up to January, 1914. This figure was seven or eight hundred million francs in excess of the liabilities of the companies to the state, because of certain credits which were allowed; the sum was, nevertheless, so great, and the likelihood of its further increase so great, that some kind of reorganization was required.[2]

Socialist Proposal for Government Purchase

The question which occupied men's minds in France at the beginning of the debates of 1920-21 was as to whether the time had not come for the state to take over the five private companies and operate them, with the old state-owned lines to the west and southwest of Paris, on government account. There were, indeed, three alternative proposals for action before the French Parliament. One of these was prepared by the Economic Council of the *Confédération Générale du Travail,* and submitted by M. Léon Blum, a brilliant radical editor and member of the Chamber of Deputies. The socialist plan contemplated government purchase, and operation through a government organization which should comprise a large central council containing representatives of the users of transportation facilities, of the government, and of the personnel, a small administrative body selected from and by the council, and a series of directors-general or general managers directly in charge of operation on the various sections into which the French system might be divided. This was government operation of the most direct sort.[1]

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[1] *Journal Officiel,* Débats Parlementaires, Chambre, 1920: 3, p. 3500, Lorin.

[2] *Journal Officiel,* Documents Parlementaires, Chambre, 1920: 2, Annexe No. 862, Exposé des Motifs, p. 1450. The government permitted a rate advance of 25 per cent in 1918. Again, in 1920, it allowed the railroads to increase their rates from 45 to 55 per cent on passengers and 115 per cent on freight. In this same year, but retroactive to July, 1918, the special reduced charges for military transports were also raised (Traité Cotelle) on the ground that these charges were below the cost of service. The changes in tariffs failed, however, to produce a surplus (*Journal Officiel,* Débats Parlementaires, Chambre, 1920: 3, p. 3508, Manoury).

Loucheur Plan

A second suggestion by M. Loucheur proposed also government purchase through state annuities payable to the old private companies. Under the Loucheur plan, however, the state railroads, when purchased, were to be leased to a new, single, private company for a rental sufficient to cover the annuities just mentioned. One-third of the stock of the new company was to be subscribed by stockholders of the Orléans, Midi, Paris-Lyon-Mediterranean, and other preëxisting railroads, one-third was to be subscribed by chambers of commerce, chambers of agriculture, and similar bodies, and one-third was to be offered at public sale. The government was to receive a portion of the profits of the new concern, and decisions of the company's administrative council could be disapproved by the Minister of Public Works, yet the state controlled rather than initiated policies, in contrast to the socialist plan presented by M. Blum.[2]

Objections to Government Purchase

It follows from what has been said that two out of the post-war solutions for French railroad difficulties had government ownership in mind, and one of these proposed direct government operation. There were, however, substantial reasons against state ownership and operation in 1920-21. These reasons were partly doctrinal. It was objected that the state had not been successful in running the railroads that it had owned before the war and would not be likely to be more successful afterward.[1]

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[1] *Journal Officiel,* Débats Parlementaires, Chambre, 1920: 3, p. 3653, Blum. See also Bressler, H. J., "The French Railway Problem," *Political Science Quarterly,* June, 1922.

[2] *Journal Officiel,* Documents Parlementaires, Chambre, 1920: 2, Annexe No. 943.

But a more important objection to repurchase was found in the terms of existing legislation regulating the price which the government would be called upon to pay. It will be recalled that, according to provisions embodied in company charters and in the conventions of 1883, the state, if it decided to purchase, was compelled to pay upon a double basis. In the first place, the state was required to provide an annuity up to the expiration of the company's concession based upon the average net earnings of the best five years out of the seven years immediately preceding the year in which repurchase occurred. This annuity was supposed to compensate for the profit which under normal conditions the carrier would obtain.

In addition to the annuity based upon the earnings of preceding years, the conventions contained the provision that the state should take over the rolling stock belonging to private companies at time of repurchase at a valuation to be determined by expert appraisal, as well as to pay the cost of "complementary expenditures."

Inasmuch as the private companies had operated at a deficit from 1914 to 1921, a literal interpretation would have relieved the state from the obligation to pay any annuity at all under the first of these stipulations. It was certain, however, that the companies would object to the inclusion of the war years in the test period, and a recent decision of the French courts in what was known as the Bordeaux Gas Case seemed to suggest that the state would be required to make equitable adjustment where, as in the railroad instance, privately owned public utilities had suffered through the war.[2]

Valuation of Rolling Stock

Leaving this upon one side, there was left the obligation to pay for rolling stock at its appraised value. How large a sum would be necessary for this transaction, no one could say. The cost price of the railroad equipment concerned, less depreciation, was perhaps in the neighborhood of 3 billion francs. The companies maintained that the replacement value would amount to 16 or 17 billion francs.[3] Even the lower of these figures would have imposed a heavy charge upon the state credit, while no minister could contemplate with equanimity the possibility of being forced to meet the larger, to say nothing of additional annuities which judicial process might compel the government to pay. For these reasons the French ministry rejected the solution of repurchase, if not permanently, at least until some future time when the obligations involved might be more moderate and better defined.

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[1] *Journal Officiel*, Débats Parlementaires, Chambre, 192:0 3, p. 3497, Lorin.

[2] *Ibid.*, Chambre, 1920: 3, p. 3649, Blum.

[3] *Ibid.*, Chambre, 1920: 3, p. 3498, Lorin.

Reorganization Proposals of 1921

We may now turn to suggestions which were proposed in 1920 for the reorganization of the French railway system. These suggestions were of two sorts: one group looking toward liquidation of obligations to the government which the private railroads had previously incurred; another contemplating a new form of organization for the future, and a policy of permanent operation and finance.[1]

Ministerial Program for the Liquidation of State Advances to Private Railroads

With respect to the liquidation of past debts the ministerial proposals were simple and occasioned no serious debate. They consisted of three parts:

1. The railroad debts to the government arising out of guaranties of interest in fiscal years prior to 1914 were to be computed as of December 31, 1913; they were to cease to bear interest after that date;[2] the debts were not to be callable except at the close of the term of a company's franchise, or upon purchase of the railroads by the government.

2. The government cancelled the debts of the companies arising out of guaranties of interest for the year 1914 and the years following, up to the coming into effect of the new control.

3. The government undertook to reimburse to the Northern Railway Company and the Paris-Lyon-Mediterranean Railway Company, in the form of annuities payable during the life of their con-

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[1] The first draft of the convention of 1921 was prepared under date of May 17, 1920. A second draft, extensively discussed, was dated November 30, 1920, and the convention in its final form bore the date of June 28, 1921. The ratifying bill passed the Chamber of Deputies on December 18, 1920, by a vote of 417 to 188. The Senate approved on July 9, 1921, with amendments, by a vote of 193 to 85, and the Chamber accepted the Senate changes on October 28, 1921, by a vote of 408 to 176. The new convention was accepted by the private companies between November 30, 1921, and January 6, 1922.

[2] If the government purchased a railroad system before January 1, 1928, the debt arising from the guaranty of interest as of December 31, 1913, plus simple interest from January 1, 1921, to the day of transfer, was to be deducted from the sum payable by the government for materials. To this limited extent interest on advances under the state guaranty remained in the account. Agreement of June 28, 1921, between the Railroad Companies and the Minister of Public Works, Art. 21.

cessions, the sums charged or to be charged to the account Capital Expenditures of these companies according to the law of December 26, 1914, where these sums had not already been covered by repayments or reimbursements effected.[1]

The amount of the concessions under these three heads was estimated at 3,975,000,000 francs.[2] The French ministry argued that the railroad companies should be relieved from losses incident to war-time operation, and also, that these clauses in the convention of 1921 formed part of a long and complicated adjustment and were partly balanced by concessions which the companies were elsewhere asked to make.

Private Railway Operation Continued

With respect to new organization and future financial policy, the provisions of the French law and the accompanying convention of 1921 were much less simple, and require careful study in order that their meaning may be made clear.

The essential features of the new arrangements were as follows: Railroad operation in France was to be left in the hands of private companies for the present, except for the state system, west and southwest of Paris, which was to be continued. The dates when the concessions of the different French railroads will expire are as follows: [3]

Name of railway	Date of expiration of concession
Northern	December 31, 1950
Eastern	November 26, 1954
Western	December 31, 1956
Paris-Lyon-Mediterranean	December 31, 1958
Midi	December 31, 1960
Orléans	December 31, 1956

The convention provided that whenever the systems of two of the contracting parties had been taken back by the government, either by purchase or after the lapse of their franchise, each one of the other companies would have the right, within a period of three months following the dissolution of the second company, to ask that it be bought. The purchase was to take effect on the 1st of January following the expiration of the three-months period.[4]

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[1] *Ibid.*, Art. 19.

[2] *Journal Officiel*, Débats Parlementaires, Senat, 1921: 2, p. 1503, Rabier.

[3] *Journal Officiel*, Documents Parlementaires, Senat, 1921, Annexe No. 486, p. 855, Report of Commissioner of Finance.

[4] Art. 20. See *Journal Officiel*, Débats Parlementaires, Chambre, 1920: 3, pp. 3716 ff., for discussion of this limiting proviso.

This indicates that government ownership may once more become a political issue in France in 1954, if not before, and again at later dates when the private railroad concessions fall in. The railroad debates of 1920-21 do not enable us to predict what the attitude of Parliament will be upon these different occasions, although the opinion may be hazarded that the decision will be greatly influenced by the condition of the French treasury when the question of repurchase *v.* lease extension is raised.

Alteration of Provisions for Repurchase

It is to be observed, nevertheless, that the convention of 1921 altered the conditions under which the government will purchase, if at a later date it feels so inclined. So far as the annuity based upon average net earnings of the best five of the seven years preceding purchase was concerned, the rule remains substantially as before. The importance of this payment decreases, however, as the period when the company concessions expire approaches. But, with respect to the method of valuing materials, including rolling stock, the rule was changed in 1921. Instead of leaving the valuation of materials to expert appraisement, presumably on the basis of market value, the new convention stipulated that the price should be the inventory figure, increased by a proportion of general expenses and interest, and diminished by one-fortieth for each full year elapsed since the 31st of December of the year when the original charge to inventory was made. This substituted cost less depreciation for market value. The change was avowedly made in order to protect the state against the assessment at post-war prices for material acquired at a lower price level before or during the war. Undoubtedly the resort to a cost basis met the particular difficulty described. It is not, however, so easy to predict the net result upon the government's finances if the level of prices in France begins to decline. Certainly the longer purchase is postponed the less advantageous to the government is the new rule likely to be.

Centralized Control Over Operation

While the operation of railroads in France was left in the hands of five separate, private companies, together with one distinct state-owned system, the law and the convention of 1921 contemplated a greater degree of coöperation between the systems than had previously been the case. Speakers in the French Parliament dwelt upon the difficulty of crossing France under the existing régime without passing through Paris, and upon differences in operating practice between French railroad systems that made it difficult for one carrier to exercise trackage rights upon the lines of another. It was recalled, for instance, that when the American armies sought to reach the battle front from the western coast of France, they were compelled to familiarize themselves with three different types of signals before they could operate through trains.[1]

Advisory Council

In order to remedy these difficulties, as well as to secure whatever savings in operating costs might be possible through more unified control, the organization of the central control in France was, in 1921, somewhat revised. Part of the change consisted in the substitution for the old *Comité Consultatif* of a new Advisory Council, which the Minister was obliged to consult on questions of interest to railroads as a whole, including technical, commercial, administrative, and financial matters. The Minister was not compelled to take the Council's advice, but in most cases he was expected to seize the opportunity to relieve himself of responsibility and to do what was suggested to him.[2]

The Advisory Council was to consist of a presiding officer and sixty members, thirty representing the public and thirty the railroads. Of the railroad representatives, eighteen were to consist of the members of the Management Committee presently to be described, and twelve were to be elected representatives of employees.[3] The thirty public representatives and the president of the board were nominated by decree rendered on the motion of the Minister of Public Works.

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[1] *Ibid.*, Senat, 1921: 2, p. 1503, Rabier.

[2] It is interesting to note that some speakers in the French Parliament took the view, in 1920, that the Minister would follow the recommendations of the Advisory Committee blindly, while others pointed out that ultimate authority lay with the Minister, and insisted that the Council would have little influence.

[3] The original provision was that employees' representatives were to be designated by the Minister of Public Works. Spokesmen for the employees in Parliament asked to have the employee representatives on the Advisory Council elected, instead of appointed by the Minister. The government expressed its willingness to appoint persons chosen by employee organizations, but argued that it would be inappropriate to insert stipulations controlling ministerial action in this respect in a convention between the government on the one hand and private railroad companies on the other. Eventually the rule of ministerial designation was retained in the convention, but Parliament directed in the accompanying law that labor representatives should be elected, as is stated in the text. Out of the twelve labor delegates, six were to be representatives from the intermediate, and six from the lower grades of railroad service (*Journal Officiel*, Débats Parlementaires, Chambre, 1920: 3, p. 3686, Le Trocquer). See *Journal Officiel*, February 15, 1922, p. 1960, for the regulations governing the election of these delegates.

According to a decree published in February, 1922, the president was selected from a section of the Council of State and the thirty public representatives were distributed as follows: three representatives of the Minister of Public Works, chosen from among inspectors-general or chief engineers of roads and bridges in active service; one representative each of the Ministers of Finance, War, Commerce and Industry; one member of the Paris Chamber of Commerce and six representatives of other chambers of commerce, of which one, at least, represented the export trade and colonial interests; one representative each of trade associations in mining, metallurgy, electricity, railroad construction and supply, light, and local railways; four representatives of agricultural societies; three representatives of shipping and interior navigation; four representatives of tourist, press, and commercial travelers' associations, of which one must be a doctor and one a commercial traveler.[1] This was a very large and heterogeneous body, which necessarily was expected to discuss only large, general policies, while the Management Committee was capable of considering detail. Critics of the Council declared that most of the representatives of the public would live outside of Paris and so would not attend meetings, and that the sessions would be dominated by railroad men. It was replied that provincials would be glad of an excuse to come to Paris, and that if representatives did not wish to come themselves alternates might be selected. The demand of various groups of people during the parliamentary debates for representation upon the Council indicates that its influence was expected to be considerable.

Doubtless under such a plan of organization the eighteen railroad representatives who constituted the Management Committee and also formed part of the Advisory Council were certain to exert a considerable influence in formulating railroad policies. It was believed, however, that they would be held in check by the representatives of other interests, while it was scarcely possible to dispense with the technical information which they possessed.[2]

Management Committee

Beneath the Minister and his new Advisory Council was placed a Management Committee, composed of the three principal officers of each of the five private companies, together with the director, president, and vice-president of the board of the state railway system. This committee was to be an executive body charged with the duty of carrying out decisions arrived at by the Minister and Advisory Council, and armed with direct authority over the staffs of the private railroad organizations with respect to policy directions. Henceforth the six great railway companies in France were to operate as a single national railway system, although the identity of each, beneath the Management Committee, was preserved.

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[1] *Journal Officiel*, February 15, 1922, p. 1960.

[2] Cf. *ibid.*, Chambre, 1920: 3, p. 3539, Chabrun.

Increased Power of the Minister

Finally, an important addition to the powers of the Minister was made through the statement in Article V of the convention of 1921 to the effect that if a railroad system in France failed to obey a ministerial decision, the Minister, after due notification, would proceed to the execution of the measures prescribed at the expense of the company, and through the power to reduce or to advance rates conferred by Article V of the law and Article IX of the convention. Previous to 1921, the Minister had only the power to approve or to disapprove changes in rates proposed to him by the private companies. The new convention gave him a direct control over both rates and operation of the private railroad system of the country, which was limited only by the financial consequences to the state treasury of action which the Minister might take.

New Guaranty of Earnings

There is some question whether the increased coöperation between French railroad systems accomplished under the committee and council organization will yield large results, as, after all, the railroads in France occupy distinct territories and compete less with each other than do carriers either in England or in the United States. The provisions of the convention of 1921 with respect to financial solidarity represent, on the other hand, a considerable change from previous practice, and one which is bound to have important effects. These provisions, in summary form, were as follows:

Under the new convention, the principle of a state guaranty of earnings was continued. This method of assistance was, as we have seen, traditional in France, and Parliament saw no sufficient reason to abandon it. The present arrangement differed from that in 1883, however, in that there was a single convention only, and not separate agreements on differing terms with each of the private companies.

Moreover, the single convention of 1921 included the state railway system. The reason for the curious procedure under which the state treasury guaranteed the earnings of the state railways will appear as the details of the plan are explained.

General Contingent Fund

In order to make the new guaranty effective, there was instituted in the public treasury a general contingent fund. From the total of its gross earnings from any source each company was to take operating expenses, interest, and amortization, certain miscellaneous charges, premiums for efficient operation (to be later described), and the following sums:[1]

For the State Railway	8,300,000	francs
Eastern	9,052,000	"
Midi	6,250,000	"
Orléans	24,600,000	"
Northern	20,000,000	"
Paris-Lyon-Mediterranean	28,000,000	"

The excess, if any, was to be paid into the general fund. Conversely, if the earnings were not sufficient to cover the total of the items noted above, the deficit was to be paid to the company from the general fund.

Advantages of the Consolidation of Guaranties

The main advantage in consolidating the guaranties of all the companies into one fund was that the surpluses of the more prosperous were in this way made available to cover deficits of companies which proved unable to meet their expenses. Under the conventions of 1883 it had happened, as late as 1913, that the government was called upon for advances under its guaranty for particular companies even though the results of operation of all the companies taken together showed a profit.[2] Under the convention of 1921 this could no longer occur. Nor is it to be forgotten that under the new arrangement the state system was included in the companies supported from the contingent fund, whereas, before 1921, the government could never apply surpluses on the private railroads to reduce losses upon railroads operated by the state.

It is true that the new arrangement tended to retard reductions in rates in certain regions where the railroads normally earned substantial surpluses, as in the territory of the Northern and Paris-Lyon-Mediterranean Railway Companies, so that objections were not unnaturally voiced in Parliament to the equalization of earnings; but the wealthier sections of France were expected to contribute in this way to the support of their less fortunate neighbors, and the protests received scant attention.

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[1] Art. 15. A similar fund had been set up in 1917, but only for a limited period (*Archiv fuer Eisenbahnwesen*, vol. xlv, p. 557). The indicated sums were substantially at the same rate per share as the guaranteed revenue under the conventions of 1883.

[2] *Journal Officiel*, Débats Parlementaires, Chambre, 1920: 3, p. 3508, Manoury.

Was the French Railroad System to be Made Self-supporting?

The consolidation of guaranties through the new conventions of 1921 thus accomplished a real saving from the point of view of government finance. As the debate upon the bill proceeded, it became evident, nevertheless, that the fundamental question of policy underlying the whole discussion was less one of equalization than it was a question as to whether the government proposed to administer the railways upon a self-supporting basis, or whether it proposed to operate at a deficit and to rely upon the contingent fund to shift the consequent losses from the railroad investor to the French taxpayer. The increased power over rates which the new legislation conferred upon the Minister of Public Works made a choice possible in this regard for the first time.

As originally framed, the proposals of 1920-21 clearly contemplated an equilibrium between receipts and expenses. The condition of French finances was thought to permit nothing else. M. Lorin, who first discussed the question on behalf of the Ministry of Public Works, declared emphatically that Ministry and Parliament would make a serious mistake if they permitted themselves to rely upon the proceeds of taxation for the maintenance of the contingent fund.[1] The state might advance money—yes; but the advances should be exceptional and temporary,[2] and repayable either from the proceeds of an advance in rates or from savings in operating expenses. This was a courageous view and one which was essentially sound.

Opposition to Advances in Rates

On the other hand, the policy of raising tariffs to meet deficits was bound to be unpopular, and its unpopularity soon became so evident that the system of more or less automatic rate increases when necessary to protect the contingent fund had to be abandoned. What was the likelihood for the future? The railroad deficit for 1920 was

[1] *Ibid.*, Chambre, 1920: 3, p. 3500, Lorin.

[2] *Journal Officiel*, Documents Parlementaires, Chambre, 1920: 2, Annexe No. 862, Exposé des Motifs, Séance du 18 Mai, 1920.

expected to be 3 billion francs, that for 1921, 1,500 to 1,800 million francs, the total up to 1927 perhaps 6 billion francs.[1] After this year it was the official view that the deficit would disappear, partly as a result of economies effected through consolidation, partly from a decrease in labor costs, partly from increase in receipts, and partly in consequence of an expected decrease in the price of coal.[2] All of which led to the conclusion that the deficit could not be covered by increased rates because it was so great and need not be because it was so temporary. This sum of 6 billion francs, reasoned the Minister, was in reality a war charge. It was, at least, a consequence of the years of war. What more equitable than to place the burden upon the shoulders of future generations who were to benefit from the nation's victory and should share in the cost of the advantages which they enjoyed? [3]

Limitation to the Authority of the Minister to Advance Rates

The result of this reasoning was to introduce an important modification to the original plan, in so far as increases in rates were concerned. Power was, indeed, given to the Minister to increase rates, even beyond the maxima fixed in the charters of the private companies, but it was stipulated that if, during the first five years, the rate increases exceeded the charter maxima by more than 180 per cent for freight and 100 per cent for passengers, the new rates might be applied temporarily but should be submitted to Parliament for its ratification. After five years, and then at the expiration of each five-year period, the 180 and 100 per cent limits might be replaced by new limits proposed to Parliament by the Minister of Public Works.[4] How the government interpreted this restriction was made clear by a statement by the Minister of Public Works to the effect that rates should be reduced, not increased, upon foods, that they should be reduced on export steel, and that the increases should be applied to articles of luxury.[5] It was no part of his program, the

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[1] *Journal Officiel*, Débats Parlementaires, Chambre, 1921: 4, p. 3642, Le Trocquer.

[2] *Ibid.*, Senat, 1921: 2, pp. 1547–1548, Le Trocquer.

[3] *Ibid.*, Chambre, 1921: 4, p. 3642, Le Trocquer.

[4] Art. 17. In 1921 freight rates in France already exceeded the charter maxima by 140 per cent. The new rule allowed an additional increase, but only to the extent of the difference between 180 and 140 per cent. Passenger fares exceeded charter maxima in 1921 by 80 per cent for first class, 75 per cent for second class, and 70 per cent for third class. The new limit permitted further advances, until the excess over the maxima should have become 100 per cent, but no further. *Journal Officiel*, Débats Parlementaires, Senat, 1921: 2, p. 1528, Regnier.

[5] *Ibid.*, Senat, 1921: 2, p. 1551; *ibid.*, Chambre, 1921: 4, pp. 3752–3753, Le Trocquer.

Minister said, to propose rates which would be harmful to the national economy.

Method of Deficit Financiering

The French Government deliberately undertook in 1921 to run its railroads for six years at a loss. What is more, it proposed to borrow the money to meet the expected losses, instead of meeting railway deficits by the proceeds of annual taxation. In order to protect the credit of the state, the railway companies were expected in the first instance to find the money through the sale of new securities. For its part, the government undertook to reimburse the carriers by annuities sufficient to cover interest and amortization charges upon the new loans and to carry these annuities into its budget. This procedure had the effect of understating the real budget deficit in the national finance, and was sharply criticized as improper and misleading, but without effect.[1]

Premiums

All this was sufficiently serious, and not only because it amounted to a large and partly concealed subsidy to industry, but also because it tended to deprive the French railroads of all incentive to efficient operation. Under the conventions of 1883 most of the companies entertained a reasonable expectation of sometime recovering the "liberty of their dividends" Moreover, the advances of the state under these conventions were regarded as reimbursable loans, to be applied at the termination of the concessions in reduction of sums otherwise due from the state. But under the convention of 1921, the companies were apparently not to be permitted to earn a profit, while, on the other hand, during six years, state advances became nonreimbursable gifts—never to be repaid. What difference could it make to a private railroad, under such an arrangement, whether it operated well or ill?

The realization of the fact that a company had nothing to gain by efficient operation unless some special inducement were provided in the law led to the insertion of some curious provisions.

Briefly stated, the intention of the Ministry was to establish a premium for efficient operation which should be divided, one-third to capital and two-thirds to labor. The proposal submitted to the

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[1] *Ibid.*, Chambre, 1921: 4, p. 3645, Blum. Government advances to the contingent fund to meet deficits incurred after January 1, 1927, were to be regarded as loans, repayable with interest, but advances to meet deficits incurred before this date were not reimbursable.

Chamber of Deputies measured efficiency partly by increases or decreases in the volume of traffic transported as compared with the year 1920, and partly by the height of the operating ratio. The companies were allowed to begin with two millimes for every passenger kilometer and thirty to forty centimes for every ton of freight transported beyond the figure of the base year. These allowances were then increased as the operating ratio declined, and other complicated adjustments were introduced to allow for the natural increase of traffic and the expected decline in the price of coal.[1]

The final result was an extremely complicated formula, which the Senate refused to accept. While the division between capital and labor was retained, the Senate substituted for the proposals of the Chamber a premium plan under which the companies were to receive (a) 3 per cent of the excess of gross earnings in any fiscal period over the earnings for 1920, and (b) 1 per cent of the decrease, compared with the fiscal year 1920, in the deficit of earnings with regard to expenditures, or if the earnings in the year under consideration exceeded the expenditures, then 1 per cent of the sum of such excess and of the deficit for 1920.

In case the premium due any company exceeded one-third of its guaranteed dividend, then one-half of the excess was to be paid into the contingent fund; if the premium exceeded two-thirds of the guaranteed dividend, then two-thirds of the surplus was to be paid into the fund.[2]

This new Senate formula was still by no means simple, but it was an improvement over the Chamber's plan and was incorporated in the law after long discussion. We shall discuss, presently, its results. The main difficulty with it was, first, that the premium accruing to any individual in the personnel was likely to be small, and, second, that neither tonnage nor increases in gross revenue were measures of railroad-operating efficiency. In fact, the companies later found it difficult to control even the relationship of earnings to expenditures, which was the second basis for premiums under the rule finally adopted, in view of the violent price fluctuations occasioned by the generally disturbed conditions of French currency and finance.[1]

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[1] *Ibid.*, Chambre, 1920: 3, pp. 3510–12, Manoury.

[2] The coefficient of 1 per cent mentioned in (b) was to be increased to 2 per cent for the Eastern and Northern Railway systems for the period 1921 to 1924; thereafter this additional 1 per cent was to be reduced by 1–10 of 1 per cent annually so as to disappear in 1934. The increase in receipts due to advances in base tariffs were not reckoned into the gross earnings considered in (a). Logically the decreases in operating expenses due to general causes such as the decline in the price of coal should also have been omitted, but in fact only half of such savings were stricken out of the account (*Journal Officiel*, Documents Parlementaires, Senat, 1921, Annexe No. 421, p. 793).

In addition to these objections, which were slightly, if at all, touched upon in the debate, there was opposition to the premium on the ground that the state would have to pay premiums in certain cases even if the railroads were operating at a deficit and the government was borrowing to pay their bills. The scheme was finally, nevertheless, adopted, in the form which the Senate had devised.

Minor Features

Among the minor features of the convention of 1921, the following matters may be briefly mentioned:

1. The companies agreed to build and finance upon demand new lines up to a total of 1,730 kilometers, or approximately three per cent of existing mileage. The companies were to contribute one-fifth of the necessary expense out of their own resources, and to raise the balance, if requested, for and on behalf of the state.[2]

2. New security issues might be sold by the private railroads with maximum maturities of sixty years.[3] Since these bonds were to fall in after the expiration of the concessions, the government undertook their eventual repayment. But the government would not, of course, agree both to redeem the bonds and to pay the companies when their franchises lapsed for the value of property purchased with the proceeds of bond sales, and an agreement was accordingly embodied in the convention under which the taking-over price of such material was to be reduced by one-fiftieth for each year between the covering of the expenditures by the bonds and the lapse of the concession.[4]

3. The companies agreed to abandon all suits against the government arising out of war expenditures, or from laws or agreements between the carriers and the government. On the other hand, the government renewed its pledge to restore the railroads, in districts affected by the war, to their condition as of August 2, 1914, especially with respect to rolling stock, equipment, and supplies.[5] The interpretation of this pledge was apparently left to the govern-

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[1] M. Jeanneney pointed out that a decline in the price of coal from 234 francs per ton in 1920 to 100 francs in 1923 would produce a premium of 6,700,000 francs without taking into account any other elements whatsoever. (*Journal Officiel*, Débats Parlementaires, Senat, 1921: 2, p. 1560, Jeanneney.)

[2] Art. 12.

[3] Art. 16.

[4] Art. 21.

[5] Art. 25.

ment, as the railroads were prevented by their agreement from suing in the courts.

Committee of Technical and Commercial Railway Operation

Since 1921 the organization of French railway control has been completed by the erection of a so-called *Comité technique et commercial des chemins de fer.* This new committee, not provided for in the law but established by decree, is advisory both to the Minister of Public Works and to the Advisory or Superior Council. Its membership includes ninety-nine appointed and a number of *ex-officio* members divided into two sections, the one commercial and the other technical. Some delegates function in both sections, others in only one. The *ex-officio* members are high government officials, and the appointed members include members of the French legislature, government engineers, and representatives of labor, agriculture, mining, industry, and commerce so distributed as to provide a broad basis of opinion and technical knowledge. The committee has no authority, but may be called upon to undertake preliminary studies for the Minister of Public Works or for the Advisory Council, or to express opinions upon ministerial requests.[1]

Working of the French Premium System

Under the premium system, the French companies earned the following sums during the six years from 1921 to 1926:

PREMIUMS EARNED BY THE EIGHT MAJOR FRENCH RAILROAD SYSTEMS, 1921–26[2]

Year	Premiums payable		
	to companies (Francs)	to government (Francs)	to employees (Francs)
1921	12,257,770	....	23,113,121
1922	27,842,834	870,685	54,542,600
1923	35,363,888	2,299,313	74,442,182
1924	40,958,049	12,951,125	80,859,080
1925	42,365,366	14,024,271	84,276,372
1926	51,824,933	25,396,853	106,695,657

The French railroad premiums added a substantial sum to the guaranteed dividends accruing to the railway companies between 1921 and 1926, but, as anticipated, they were comparatively insignificant in so far as the personnel was concerned, in spite of the large amounts apparently involved. In 1926, for instance, the effective number of French railway employees on the major systems was 506,843. The premium payable to personnel from the earnings of 1926 was 106,695,657 francs, but this permitted a supplement to wages of only 211 francs per employee upon the average, or, at a valuation of four cents to the franc, it amounted to the modest average amount of $8.44 to each railway worker in the course of the year. On the other hand, the company premium of 51,824,933 francs was more than 47 per cent of the guaranteed dividend for the period.[1]

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[1] *Journal Officiel*, February 15, 1922, p. 1961.

[2] The companies represented in the table are the Northern, Eastern, P. L. M., Orléans, Midi, State, and Alsace-Lorraine systems.

Payments to the government included in the table resulted from the requirement that each company must turn a portion of its premium into the contingent fund when the premium exceeded one-third of its guaranteed dividend. The recovery under this head proved unexpectedly great.

Increase in Dividends to Stockholders

The chief effect of the premium system has been to raise the dividends paid to stockholders of French railway companies. The variations in these dividends since 1913 are set forth in the following table:

DIVIDENDS PAID TO THE STOCKHOLDERS OF THE GREAT FRENCH RAILROAD COMPANIES, 1913–26 [2]

(In francs per share)

Year	Northern	Eastern	Orléans	P.L.M.	Midi
1913	74	37·50	59	57	50
1914	44	35·50	59	59	50
1915–1918	44	35·50	59	40	50
1919	54	35·50	59	55	50
1920	54	35·50	59	55	50
1921	62	40	59	55	50
1922	67	43	60	65	55
1923	67	43	60	65	55
1924	75	47	60	70	55
1925	80	48.50	60	70	57·50
1926	90	50	65	75	60

During the war the dividend rates of the great companies remained at the minima set by the conventions of 1883. The table shows that a recovery began in 1921, which carried the distribution to a higher level than in 1913; indeed, the level is higher now than it has ever been.[1] It is true that the present rate of payment has not been reached without some call upon reserves, and that the Northern Railway has benefited, in particular, from a profitable contract covering the operation of certain Belgian lines; the premium, however, has been the principal source of dividends over and above the guaranteed rate.

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[1] The computation in the text includes a guaranteed dividend of 4,000,000 for the railways of Alsace-Lorraine and one of 8,300,000 for the state system. The two figures mentioned are used by the Ministry in certain calculations relative to the premium, although they are unimportant for most purposes.

[2] The par value of Northern shares is 400 francs, that of the other companies 500 francs, per share.

Operation of the Contingent Fund

The real railway problem in France during the past six years has not, however, been that of augmenting the revenues of stockholders, nor even that of creating an incentive for efficient railroad operation; it has been rather how to find a way to reduce railway deficits.

Experience has made it clear that the general contingent fund established in 1921 is a real source of relief to the Treasury. In 1926, for instance, the accounts of the great companies showed that the state system had run behind by 111 million francs, the Midi Railroad by 9.7 million francs, and the Orléans Railroad by 114 million francs, or a total of 235 million francs. Under the conventions of 1883, the state would have been liable for these deficits irrespective of the results of the operation of the other systems. But it also appeared, in 1926, that the Eastern Railroad had earned a surplus of 202 million francs, the Northern a surplus of 141 million francs, the P. L. M. a surplus of 326 million francs, and the railroads of Alsace-Lorraine a surplus of 106 million francs, or a total excess of more than 775 million francs. This was sufficient to cover the deficits recorded by the less successful systems, and to leave a net balance for the state.

The possibilities of the contingent fund are, however, exhausted, when the surplus of the better situated systems has been set against the deficits of the less fortunate. The fund provides no remedy for a condition such as that which existed in 1921, when all the railroads reported deficits. For such a condition there are only three remedies; first, an increase in business; second, an advance in rates; and third, a decrease in the cost of transportation.

Colson Report of 1926

The question of possible economies in the management of the French railway system was considered in a report prepared by M.

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[1] The Eastern Railroad in 1857 and the Orléans in 1865 doubled their capital stock. The dividend paid upon the small number of shares which were outstanding before the new issues were put out was higher than that now paid, but the earlier and the later stocks can scarcely be compared.

Colson, vice-president of the Council of State, and published early in 1926. This report proposed certain reductions in personnel, the elimination or restriction of secondary services such as the delivery of baggage, the sale of coal boats which some lines maintain to supply their fuel needs, the substitution of automatic signals at grade crossings for the present system of paid guards, and a slowing down of new capital expenditures, especially those in connection with railroad electrification.[1] Something may, perhaps, be done along these lines, but, generally speaking, decreases in expenses upon a large scale are impossible in France because they involve decreases in wages which the railroad personnel is in no condition to endure.

Increase in Rail Traffic

Fortunately for the government, there has occurred a steady, though by no means a sensational, increase in freight traffic since 1921, and a less pronounced and more irregular advance in passenger movements.

The last official government statistics, those for 1926, show that between 1921 and 1926 the number of tons transported [2] increased by 109 million tons, or 53 per cent, and the number of passengers by 118 million persons, or 18 per cent. This gain has relieved the situation, although by itself it has been insufficient to create an operating surplus.

Rate Advances

The most effective influence in rescuing the French railroads from a really desperate situation has been an advance in rates—an advance which the Ministry has finally authorized in spite of the hesitations of Parliament in 1921, and the limitations which the lawmakers at this time sought to place upon ministerial powers. The speed with which rate increases followed one another between 1924 and 1926, as well as the extent of the earlier advances in 1918 and 1920, is shown in the table on page 617.

The table shows that passenger rates upon French railroads were increased by 240 per cent of the pre-war base between 1918 and 1926, and freight rates by an even greater amount, or 320 per cent. These increases occurred, for the most part, in 1924, 1925, and 1926, although an advance took place immediately after the passage of the new law. The percentage of advances applied to foodstuffs, news-

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[1] *Journée Industrielle*, January 21, 1926.

[2] Not including express and fast freight.

GENERAL RATE INCREASES ON FRENCH RAILROADS, 1918–26[1]

		Passengers		Freight	
Effective	Class	Per cent	Per cent cumulative	Per cent	Per cent cumulative
April 15, 1918	All classes	25	25	25	25
February 23, 1920	1st class	55	80	115	140
	2d class	50	75		
	3d class	45	70		
March 10, 1924	1st class	90	170	30	170
	2d class	85	160		
	3d class	80	150		
January 1, 1925	......		......	20	190
March 16, 1925	......		......	10	200
January 1, 1926	1st class	20	190	30	230
	2d class	30	190		
	3d class	40	190		
May 1, 1926	All classes	20	210	20	250
August 16, 1926	All classes	30	240	70	320

papers, and fertilizers was somewhat less than that applied to ordinary freight, or a total of 290 as compared with 320 per cent, but the difference is scarcely material.

It will be recalled that, in 1921, Parliament voted that rate increases which exceeded 180 per cent of the charter maxima for freight or 100 per cent for passengers should, during the next ensuing five years, be submitted for legislative ratification, and that after five years the 180 and 100 per cent limits should be replaced by new limits, proposed by the Minister, but established by the lawmaking body. It is obvious that advances of 240 and 320 per cent were required to be submitted to Parliament under this rule. Bills have accordingly been introduced, but Parliament has not acted; the advanced rates are nevertheless collected upon ministerial authority. The anticipated revision of the 180 and 100 per cent limits has not yet (August, 1927) taken place, although it is considerably overdue. The Ministry has assumed responsibility in these matters, and the two Houses have acquiesced.

Decline in Deficits

During the last six years, and mainly because of advances in both freight and passenger rates, the gross earnings of the French railroad system have increased and the annual deficit has declined. The actual results have even approximated the estimates framed in 1920, although the underlying factors have not been those which were expected. The annual deficit of the eight important systems, including the railroads of Alsace-Lorraine and the Belt Railroad of Paris, was 2,155 million francs in 1921, or rather more than the Parliamentary estimate called for. In 1922 the deficit had fallen to 1,167 million francs, in 1923 to 1,124 million francs, and in 1924 to 467 million francs; in 1925 it rose again to 610 million francs. In 1926, for the first time, a net surplus appeared, amounting to the very considerable sum of 534 million francs. The results for 1927 are not likely to be as favorable as in 1926; indeed, a deficit of more than 421 million francs is now expected.

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[1] Percentage advances are figured upon the pre-war base, not upon the rates immediately preceding the advance.

The progress toward equality between the receipts and the outlays of the French railroad system, and the disappearance of the huge deficits of earlier years, permit one to hope that stabilization is in sight and that the railroad administration will soon be able to address itself to the much-needed enlargement of its equipment and to the improvement of its line. There are possibilities in the way of electric traction in France which the country should not delay to realize, although, so far, only a beginning has been made, and there is urgent need of additions to railroad rolling stock, as the annual increase in the number of cars and locomotives has not kept pace with the increase in traffic even during the past six years.[1] If French railroad earnings are not maintained, the accomplishment of this program of improvement will be, of course, delayed.

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[1] The text has fully explained the burden which the French railway system imposes upon the national Treasury. There are, however, some compensating items. In 1925, for instance, the great systems paid 1,044,047,675 francs in taxes, and the premiums on operation accruing to the government amounted to 14,024,271 francs more. These items should be considered in comparing the income of French railways with those of government railroads in Germany. Undoubtedly the railroads of a country should contribute to general governmental expenses, but the fact that the French railroads do so, even when operating at a deficit, should not be overlooked.

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CHAPTER XXXII

THE RELATIONS BETWEEN THE PUBLIC AND THE RAILWAYS IN GERMANY

Extent of Government Ownership of Railroads Before 1870

Early railroads in Germany were sometimes privately owned, and sometimes they were financed, owned, and operated by the states which later formed the German Empire.

The extent of government ownership in Germany for many years was determined by quite practical considerations. The administrations of the different states permitted private capital to build railroad lines, and much construction occurred under private auspices; on the other hand, the government, as in Baden, sometimes reserved the trunk lines for itself, and still more frequently undertook either main or secondary railroads in which private capital was unwilling to invest. The result was a confused and fluctuating organization, with an increasing tendency toward state ownership.

State Regulation of Private Carriers

In so far as there were privately owned railroads in Germany, these were regulated by charter provision and by general law, very much as in England, although the practice was rather to vest authority in the ministries of the various states, than to make use of railroad commissions or to create organizations resembling the British Board of Trade.

Since 1871 the German Empire has been a federal state and under its constitution the imperial government, as distinguished from the state governments, has exercised jurisdiction over both private- and state-owned systems with respect to national defense and common intercourse, though not with respect to matters of local concern.[1]

The parliament of the Empire has used its power to pass safety-appliance legislation, and also statutes fixing a standard gauge, providing for the marking of freight cars, setting a maximum limit for grades and curves, laying down general prescriptions with respect to signals, and covering other matters of like character. Mention may also be made of sections of the imperial *Handelsgesetzbuch,* such as those regulating the liability of common carriers, of the law defining the responsibility of carriers for accidents involving injury or death, of military and postal regulations, and of rules relating to international traffic. These laws and regulations apply, as has been said, to state-owned systems as well as to railroads in private hands, and have produced a much-needed standardization in essential matters of construction and operation.[1]

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[1] The clauses of the constitution of 1871 which conferred authority upon the imperial government were taken from the constitution of the North German League, adopted in 1867. A proviso, however, limited their application in so far as Bavaria was concerned. The imperial government was given the power to prescribe standards of construction and equipment for Bavarian lines deemed important for national defense, but other railroad clauses in the constitution were not applied to Bavaria.

Conditions of Railroad Ownership in 1870

At the outbreak of the Franco-Prussian War in 1870, the railroads of Hanover, Baden, Würtemberg, and Oldenburg were, with unimportant exceptions, state owned. In Bavaria, Saxony, Hesse, and Prussia, there were both state and private systems. In Mecklenburg the railroads were in private possession of the reigning duke. The Main-Neckar Railway, from Frankfort to Basel, was owned jointly by three states, Baden, Hesse, and Prussia. These were the most important railroad groups.[2] It will be observed that state ownership, on the whole, predominated, but that privately owned railroads were to be found in the largest and most prosperous German states.

Arguments For and Against Private Railroad Operation

It was after the Franco-Prussian War that the question of state *versus* private management of the German railroads was raised in such a way as to compel something like a general conclusion. The debate was most vigorously conducted at this time in the state of Prussia, where privately owned railroads were most numerous. There were those who believed in private operation for Prussia, and who urged at least a continuance of the mixed system which had characterized the Prussian network for many years; and there were those also who were convinced that the German railroad system could not remain half state owned and half privately owned, but must pass unreservedly and entirely under government control.

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[1] A convenient compilation of German statutes is the *Handbuch der Gesetzgebung in Preussen und dem Deutschen Reiche*, edited by Graf Hue de Grais (Berlin, 1906). Volume xix, compiled by K. Fritsch, contains the railroad laws. Treipel, Heinrich, *Die Reichsaufsicht* (Berlin, 1917), and works therein cited contains a useful discussion of constitutional provisions in Germany relating to railroads during the period prior to 1919. It may be said that imperial statutes regarding matters discussed in the text are largely based upon conclusions arrived at by the German technical railroad association known as the "Verein Deutscher Eisenbahnverwaltungen."

[2] Kech, *Geschichte der Deutschen Eisenbahnpolitik*, 1911.

The argument for private operation was, in 1870, that private management was more skillful and enterprising than state management, and that the German private railroads, in particular, had given evidence of their competence by their responsiveness to local necessities, and by the adequacy with which they had met the transportation needs of the districts which they served.

On the other hand, the advocates of government ownership called attention to the wastes of competitive and speculative railroad construction, to the confusing variety of tariffs in force, to the inconvenience of shipping over private lines when more than one company was concerned, to the cost of keeping track of freight cars and of returning them to their owners, and to the high rate of interest paid by private companies as contrasted with the low interest rates secured by the state. These were not all of the arguments presented to the Prussian Parliament in 1879, but they were considerations which had weight, and they supplied a large part of the theoretical basis for Prussian policy during the next ensuing year.[1]

Government Buys the Private Lines in Prussia

The state purchase of railroads in Prussia was not a single operation, carried through at a single time, but rather a series of successive, independent transactions, authorized by different laws.[2]

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[1] See *Die Erwerbung der Deutschen Eisenbahnen durch das Reich* (Berlin, 1876). Mention should also be made of influential speeches by Leopold Lasker in the Prussian Lower House on January 14 and February 7, 1873, and to the report of a Parliamentary committee which grew out of them. Lasker denounced certain officials in the ministry, whom he accused of using their official position to secure railroad concessions for themselves (Lasker's *Rede gegen Wagner und uber des Eisenbahnkonzessionswesen in Preussen* Berlin, 1873). The Parliamentary committee of investigation, after fifty-six sittings, declared that it could not avoid the conclusion that sound policy required the union of all railroads in the hands of the state as the ultimate goal of public policy. Among still other reasons for government ownership not mentioned in the text may be listed the desire of the government to use the railroads in a positive way for the development of German industry. Simon Sterne asserts that a minor motive was the wish to find appropriate occupation for army officers retired in the course of a contemplated army reorganization (*Quarterly Journal of Economics*, July, 1887, p. 453).

[2] The critical piece of legislation was the Act of December 20, 1879, providing for the purchase of the Berlin-Stettin, the Magdeburg-Halberstadt, the Hannover-Altenbekener, and the Koln-Mindener railroad companies by the exchange of state obligations for outstanding capital stock. The reason why this particular law is to be considered important is that it provided occasion for an elaborate debate in which the advocates and the opponents of state ownership expressed their views, and, also, that it enabled Minister von Maybach to measure the support which his measures could command. (See Jungnickel, Friedrich, *Staatsminister von Maybach*, Stuttgart and Berlin, 1910.)

Most of the acquisitions of the Prussian government occurred, however, between October, 1879, and April, 1884. Taken year by year, the purchases were as follows:

PRIVATE RAILROADS PURCHASED BY THE PRUSSIAN GOVERNMENT

Year	Mileage acquired (Miles)
1872	31.05
1876	138.90
1879	2,090.06
1880	1,017 95
1882	1,954.39
1884	2,339.93
1885	588.82
1887	325.94
1889	38.37
1890	278.24
Total	8,803.65

During the period between 1879 and 1890, Prussia incurred an expense of 4,147,857,050 marks for the purchase of railways. Of this, approximately one-half, or 1,998,697,350 marks, took the form of the assumption by the state of responsibility for the repayment of outstanding railway obligations, and most of the rest, or 1,995,079,900 marks, consisted in the exchange of state securities for railway stock. Only the very moderate sum of 154,079,800 marks was paid in cash.[1]

Distribution of Railroad Ownership Before and After State Purchases

The effect of state purchase upon the distribution of railroad ownership in Prussia may be most clearly seen if we consider the facts relating to the main-line railroads, concerning which statistics are most readily available, and exclude the secondary lines which are included, with the primary ones, in the table of state purchases just presented. If we do this, we find that on April 1, 1879, 3,321 miles of main-line railroads in the State of Prussia were state owned, and 2,375 miles more were state operated, as against a privately owned and operated system of 4,870 miles, or a proportion of 31 per cent state owned, and 54 per cent state operated. On April 1, 1884, 9,545 miles of the main-line railroads in Prussia were state owned, and 295 miles more were state operated, as against a private system of 1,131 miles; or a proportion of 87 per cent state owned and 90 per cent state operated.[1]

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[1] Leyen, A.v.d., "Die Durchführung der Eisenbahnverstaatlichung in Preussen," *Archiv fur Eisenbahnwesen*, 1890, p. 578; Fochier, Emmanuel, *L'eploitation des chemins de fer par l'état en Allemagne*, Paris, 1901. The book value of the private railways taken over was 3,666,837,400 marks.

Still later, on April 1, 1891, the state-owned lines amounted to 10,775 miles out of a total of 11,270 miles in Prussia, or a proportion of 96 per cent. A change from a condition in which the State of Prussia owned 31 per cent of the main-line railroad mileage within its boundaries to one in which it owned 96 per cent of this mileage, clearly represented a change in policy of a radical and decisive sort.

State Ownership Outside of Prussia

Meanwhile, Bavaria in 1875, and Saxony from 1876 to 1881, had purchased most of their remaining private railroads in order to consolidate their local position against imperial aggression. Private railroads continued in Hesse until the conclusion of the agreement of 1896, when Prussia took over the operation of the Hessian lines. Yet Hesse was a small state, and after 1891, the great majority of railroad lines in every part of the federated German Empire, except in Hesse and in Elsass-Lothringen, were owned and operated by the government of the state in which they lay.[2] We have thenceforward to speak of the state systems of Bavaria, of Saxony, of Baden, and of the rest, and not of private companies like those in France, England, and in the United States.

Absence of National Railroad Control in Germany

It is a rather curious result of the political history of Germany that while this country has been for many years a leading exponent of state ownership, she only recently gained her own consent to the nationalization of her railway lines. We have spoken of government ownership of railroads in Prussia, but if government ownership upon the Prussian plan had been adopted in the United States before the World War, we should have witnessed one state-owned railway system in New York, another in Pennsylvania, and another in Texas, or some forty-eight different operating units in all, many of them inferior in size to existing private systems, and most of them badly placed with respect to the receipt and delivery of traffic. An organization of this type is, of course, defective, and would not have been deliberately adopted in Germany any more than in other countries, if it had not been for the existence there of strong local and self-conscious political groups.

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[1] The mileage referred to as state owned and operated included in both years an undetermined amount which is described in the official reports as operated on state account. This mileage may be properly included as part of the state system, as it was irrevocably committed to state management.

[2] The railroads of Elsass-Lothringen were owned by the German Empire.

The Imperial General Railroad Office

The history of attempts to create a national railroad, as distinguished from a series of state owned railroad systems in Germany, covers a period of nearly fifty years.[1] One of the first of these attempts consisted in the organization of an imperial railroad office. The law establishing this office was passed on June 27, 1873.[2] It provided for a standing commission of undetermined size, which was to be appointed by the Emperor, and was to have general responsibility for the enforcement of constitutional clauses relating to railroads. Pending the passage of a general law, the commission was compelled to rely upon regulative bodies of the various German states for the enforcement of its orders against private railroad companies, and upon the Imperial Chancellor, when railroads belonging to the Empire were concerned. State-owned German railways could be coerced only in a "constitutional manner," that is to say, by ultimate appeal to the Bundesrath. The ineffectiveness of this machinery is evident.[3]

Failure to Enact a General Law

After the creation of the imperial railroad office, it was proposed to pass an interstate commerce law in Germany, in order to interpret and to apply constitutional provisions relative to railroads, and to endow the imperial railroad office with real authority. Leyen thinks that Bismarck might have forced a railroad law through the Reichstag if he had been willing to override a substantial minority of deputies, but says that action of this type was inconsistent with Bismarck's political principles, and that constitutional questions probably would have arisen in any case which would have thrown the matter into the Bundesrath, where the proposal would have been beaten.

[1] Leyen, A.v.d., *Die Eisenbahnpolitik des Fürsten Bismarcks.* Berlin, 1914.

[2] *Reichs-Gesebtlzatt, 1873*, p. 164; see also Leyen, *sup. cit.*, pp. 178–179.

[3] The imperial railroad office continued to exist until April, 1920, and rendered useful service of a minor sort. It never functioned as an effective agency of regulation.

Ownership of Railroads by the Empire

Even before the definite failure of the project for imperial legislation in 1875, an alternative project was discussed that contemplated the purchase of German railroads by the Empire. One reason, though perhaps a minor one, for opposition to the passage of a general railroad law, had been the fear of the effect of such legislation upon the finances of the state railroads; and the proposal for imperial purchase was expected to conciliate opposition by placing the risk growing out of imperial regulation upon the imperial budget, not upon the budgets of the state railroads and thus ultimately upon those of the various states.

The plan for imperial ownership was launched in 1875. It aroused great interest, and even led to the passage of an Act by the Prussian legislature on June 4, 1876, authorizing the transfer of Prussian state railroads to the Empire in return for a proper compensation. Bavaria, Saxony, and Würtemburg, however, refused to increase the strength of the central government by conveying their railroads to the Empire, and only Hesse positively signified her assent. Under these circumstances Prussia would not proceed, for by alone conveying her railroads, she would have admitted all German states to a share in their control, without thereby creating a national railroad system on all parts of which she might have exerted influence.[1]

Coöperation of Railroads in the Empire

The failure of the project for an imperial railroad system in 1876 was undoubtedly discouraging to the advocates of unified and coördinated railroad management within the German Empire. On the other hand, too much emphasis must not be laid upon the purely formal side of interrailway relations in Germany, nor must it be supposed that the different state systems refused, after 1876, to coöperate with one another merely because they were separately controlled.

The factors which contributed to the standardization of railway practice in Germany prior to the World War were, first, the dominant position of Prussia; second, the activity of the Verein Deutscher Eisenbahnverwaltungen, an organization similar to our own American Railway Association; third, the influence of imperial legislation; and, lastly, the success of the various state administrations in agreeing upon a freight-car pool which, after 1909, enabled the cars of each state system to circulate upon the rails of other systems with a minimum of records, reports, and delay.

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[1] The private railroads in Germany put themselves on record as opposed to an imperial railroad system. They still believed, in 1876, that they could meet any standard of public policy which the government cared to impose upon both private and state-owned lines, and were willing to support the project for a general imperial railroad law. But they felt that they could not expect fair treatment if the Empire which regulated them operated railroad mileage of its own. The question was decided, however, on political rather than on economic grounds, and the views of the private companies carried little weight.

It is not possible, in a rapid review of German railroad history, to consider the influence of these factors in detail, but they all clearly contributed to the organization of a system of transport which formed a coördinated whole in many respects, although there still existed some differences in practice, and a good deal of jealousy between Prussia and the South German states. The effect of the World War was to strengthen the influences which made for national unity and to weaken those which worked for local independence, because the war stimulated a strong national self-consciousness and produced a vivid sense of the advantage, in an emergency, of unified control of a transportation system, as contrasted with segregated administration by a number of separated states.

The Constitutional Convention of 1919

When the German constitutional convention met, in 1919, it was perceived that the powers most necessary to a strong central government were those over finance, defense, and transportation. It was proposed at the beginning that the powers over transportation to be exercised by national authority should be those of regulation and control; but the intention of the leaders went further than this, and harked back to something like Bismarck's plan of 1875 for a railroad system owned and operated by the Empire.

It is true that Prussia was at first reluctant to accede to such a scheme, as her old-time friendliness to the imperial railroad idea had yielded to a keen appreciation of the convenience of owning property which contributed each year large sums to her Treasury.[1] Bavaria was also opposed, as she preferred a voluntary basis of unification, if independent railroad ownership was no longer possible, which might enable her to secure concessions in return for the surrender of the exceptional position which she enjoyed under the constitution of 1871. Yet political necessities were too apparent to permit either Prussia or Bavaria to resist. The constitutional committee of the Assembly reported in favor of a nationally owned railroad system. Prussia and Bavaria gave their assent, and April 1, 1921, was set as the final date upon which the reorganization was to be accomplished.

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[1] Prussia's objections were not entirely financial. She feared that surrender of the Prussian railroads would reduce her political influence in the Empire, and, also, that an imperial administration would support industry less generously and effectively than the Prussian railroad administration had done (Lagatz, "Zur Geschichte des Reichseisenbahngedankens," *Archiv für Eisenbahnwesen*, 1920, p. 321).

Provisions of the Constitution

The German constitution of 1919 declared that the Empire possessed power of legislation over railroads, inland waterways, motor traffic, and air traffic; it asserted that it was the duty of the imperial government to take title to the entire major railroad network of the country, and to administer it as a unified whole upon a self-supporting basis.

The constitution and subsequent laws and ordinances considered together,[1] now transferred all the rights of the states with respect to railroads to the nation. The railroad system was to be run as a separate governmental unit, paying its own way and providing interest and amortization charges upon the railroad debt. Income and expenses were, however, to be incorporated in the annual national budget. Secondary railroads were to be subject to national control, but might be operated by private parties. This was the general outline of the system approved as part of the governmental reorganization in Germany which followed the conclusion of the war.

Transfer of State Railroad Systems to the Empire

As a matter of fact, the transfer of the German state railroad systems to the Empire took place on April 1, 1920, one year before the final date named in the constitution, because of the urgent need for unified operation to offset the scarcity of coal and of motive power, because employees demanded higher pay, and because state governments encountered difficulty in covering railroad deficits after the new constitution had limited their taxing powers.

The terms of the transfer deserve somewhat careful attention. In taking possession of the various German railroad systems in 1920, the Empire concluded agreements with the governments of Prussia, Bavaria, Saxony, Würtemberg, Baden, Hesse, Mecklenburg-Schwerin, and Oldenburg, under which it took over the entire railroad systems belonging to these states in return for a payment upon one or the other of the two following bases:

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[1] Gesetz betreffend den Staatsvertrag über den Übergang der Staatseisenbahnen auf den Reich. Vom 30 April, 1920. *Reichs-Gesetzblatt*, 1920, p. 773. See also Verordungen betreffend Ermachtigung des Reichsverkehrsministers zur selbstandigen Ergänzung und Änderung der Verordnungen, die den Bau, den Betrieb und den Verkehr der Eisenbahnen regeln. Vom 29. Oktober, 1920. *Ibid.*, p. 1859.

a. The cost of construction as of March 31, 1920, increased by the sum of the deficits incurred from 1914 to this date; or,

b. The sum of the cost of construction as of March 31, 1920, and the capitalized earning value of the system purchased, divided by two, and increased by the sum of the deficits incurred from 1914 to March 31, 1920, as in the preceding case.

If we may indicate deficits by the letter (a), cost of construction by the letter (b), and earning value by the letter (c), then the alternative formulas were $a + b$ and $a + \left(\frac{b + c}{2}\right)$. It may be added that earning value itself was calculated by multiplying average net receipts from 1919 to 1913 by 25.[1]

Purchase Price and Method of Payment

Actually, the purchase price finally amounted to the following sum: [2]

Item	Amount (Billions of marks)
Cost of road account	21.52
Additions to cost of road on account of improvements and additions not hitherto charged to cost of road	5.34
Additions through operation of clauses relating to earning value	5.74
Deficits	6.40
Total	39.00

Inasmuch as very large sums were involved, it was desirable to find a means of payment which should disturb the market as little as possible. The national government therefore assumed the floating debts of the various states as of March 31, 1920, and credited the amount of these debts against the payments due the states. Beyond this, the states were permitted to require the national government to take over their entire funded debts also, whether or not incurred for railroad purposes. The difference between the agreed price of the railroads and the debts assumed was itself funded, at 4½ per cent in the case of railroad systems transferred upon a cost-of-road basis, and at 4 per cent in the case of other systems.[1] In the case of a state which did not exercise its option to require the assumption of its funded debt, the national government provided the whole of the transfer price less allowance for floating debt, while the state government remained responsible for its own obligations. There seems to have been no great difficulty over these arrangements, and agreements were rapidly made.

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[1] See the excellent account of the process of imperial purchase in Sarter, Adolf, "Die Reichseisenbahnen," *sup. cit.* The language used in the purchase agreements required, of course, much interpretation. Saxony, Würtemberg, and Mecklenburg-Schwerin elected alternative (a); Prussia, Bavaria, Hesse, and Oldenburg elected alternative (b); Baden elected alternative (a) for the lines which she herself operated, and (b) so far as her share in the Main-Neckar Railway was concerned.

[2] *Geschäftsbericht der Deutschen Reichsbahn über das Rechnungsjahr 1920*, pp. 4–5. The items added to cost of road on account of improvements included expenditures out of earnings, expenditures out of state funds not charged to the state railways, gifts of land or transfers of lands from other state departments or outside parties, and discounts on state loans for railroad purposes.

Imperial Authority Over Private Systems

Finally, the Empire assumed, in 1919, full control over private railroads, as well as over the state railroads that were transferred to it for a consideration. The constitution of 1919 vested in the Empire instead of in the states the right of eminent domain, and of sovereignty in the railroad field. The latter phrase implied tariff control, the right to grant or to withhold permits to build, to determine the character of railroad construction, and to supervise construction, operation, and management, the right of police, and, lastly, the right of condemnation for state purposes. Henceforth the supreme power was to lie with the national, not with state, government, although the former might, conceivably, still transfer to the latter such of its functions as it desired to delegate.

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[1] The accounts of the Reichsbahn show that 16.9 billion marks of state floating debts were taken into the budget for the year ending March 31, 1921. Prussia, Hanover, Bavaria, Saxony, Baden, Hesse, and Mecklenburg-Schwerin exercised their option to transfer their funded debts to the Empire. The amount involved was 15,225,386,637 marks. Würtemburg and Oldenburg did not transfer their debts, although they applied for and obtained an imperial guaranty on 949,464,550 marks. Minor details relative to the transfer of state property to the Empire were still pending as late as March, 1923. See especially *Geschäftsbericht der Deutschen Reichsbahn über das Rechnungsjahr 1920.* The law relating to the transfer of funded debts is printed in the *Reichs-Gesetzblatt*, 1922, p. 693.

It is to be observed that the debts of the states were transferred to the Empire, not to the imperial railroads, and this was necessary because the railroads had no funded debt of their own. The railroad budget was charged, however, with interest on and amortization of the state indebtedness, as well as with interest on what was called the *Restkaufgeld*, consisting of the difference between the total purchase price and the sum of the funded and floating debts which the Empire assumed. The state funded debts were not passed through the accounts of the imperial railroads. The floating debts of the states were charged, as has already been said, as an extraordinary expense in the railroad budget of 1921, offset by an extraordinary income from loans. The loans referred to in this connection were imperial, not railroad, loans, but in the following year interest and amortization on imperial obligations issued in the course of the assumption of floating indebtedness were charged against railroad income just as interest and amortization on other government indebtedness incurred for railroad purposes was charged. The progressive inflation of the German currency during these years makes it difficult, however, to follow particular items through the accounts.

Agitation for Private Ownership of Railroads in Germany

Shortly after the transfer of the state railroad systems in Germany to the Empire, certain elements in Germany expressed the view that the railroads of the country should be cut loose from the necessities of national finance.

The extreme position, taken by the Association of German Industries in 1921, was that the imperial railways should be separated from the state and placed in the hands of a private company. This view was supported by a vigorous criticism of the service which the state railroads had rendered during the war, and by the argument that private operation would bring with it improved methods and policies, and a better spirit on the part of the railroad personnel. The memorandum published by the association called forth an elaborate reply from a committee organized by the Ministry of Railroads, as well as a considerable amount of private discussion. In the end, the agitation for private ownership did not prevail.[1]

The Emergency Ordinance of February 12, 1924

The German government was itself disposed, however, to withdraw treasury support from the imperial railways, and at the same time to grant them as great independence in operation and finance as was possible under the constitution of 1919, although it by no means favored the transfer of government property to private interests. Beginning November 15, 1923, it accordingly cut off the subsidies which it had furnished during three of the four preceding years, and three months later it issued the so-called Emergency Ordinance of February 12, 1924.

This ordinance declared the imperial German railways to be a legal personality, with power to make agreements, incur debts, and own certain kinds of property separately from the German government, and to operate independently of the imperial administration. The practical effect was to emphasize the obligation of the state railways to provide funds for their maintenance and development from their own revenues and by the use of their own credit, in accordance with the terms of the constitution of 1919. At the same time the railways were liberated from the state budget, which meant that they were no longer obliged to seek budget authorization for their expenditures and to pay over their revenues to the Empire, but were obliged only to deliver their surplus receipts to the imperial government—a much more independent position.

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[1] The documents in the debate include (1) "Die Deutsche Eisenbahnfrage," (Kar Siegismund, Berlin, 1922); (2) "Staatsbahn oder Privatbahn" (Verlag fur Politik und Wirtschaft, Berlin, 1922); (3) Spiess, W., "Der Kampf um der Eisenbahnen" (Frankfurt, 1922). See also articles opposing the transfer of the state railroads to a private company by Leyen (*Bank Archiv*, vol. xxi, no. 15, 2 May, 1922), Hoff (*Zeitung des Vereins Deutscher Eisenbahnverwaltungen*, vol. lii, no. 17, 1922), and von Breitenbach (*Tageszeitung*, 30 May, 1922).

These definitions or grants of power were, it is true, qualified by the fact that title to the German railway system remained in the imperial government,[1] that the Minister of Transport held the position of chief of the imperial railways, that the debts of the railways could be increased only after previous conference with the Minister of Finance, that changes in rates required government approval, and that, as has been said, net earnings were payable to the state.[2] It is not certain what the ultimate result of this cautious balancing would have been, yet it is at least possible that it might have marked the beginning of advantageous changes in the administration of the German railway system, if time could have been allowed for a gradual development. In practice, the ordinance had little effect, as it was superseded on October 11, 1924, by the more comprehensive change in organization to which we will now turn.

Treaty of Versailles and the Dawes Plan

The Treaty of Versailles pledged the entire property of the Empire as security for the payment of reparations. In January, 1923, the French and Belgians occupied the Ruhr, in an attempt to collect war damages which the Germans were disinclined to pay. In order to induce them to withdraw the German government offered, among other things, to pledge the imperial railroad system for the repayment of an issue of 10 billion gold marks, or 2½ billion dollars, in 5-per-cent obligations. This was the situation late in 1923, when Sir William Acworth and M. Leverve were called in to advise the Dawes Commission, and the German offer was perhaps one of the circumstances which suggested to these experts the designation of the

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[1] Except for cash and supplies, which became the property of the railway.

[2] Sarter, Adolf, "Die Umwandlung der Deutschen Reichsbahn," *Archiv für Eisenbahnwesen*, 1924, p. 201.

German railways as a source from which reparations obligations might be met. In any case, the commission's memorandum of April 9, 1924, made three general proposals affecting German railroads:

1. That the German rail properties be mortgaged to the extent of 11 billion gold marks, and that the bonds be turned over to a trustee appointed by the Reparations Commission.

2. That the greater part of the proceeds of a transportation tax, first levied by Act of April 8, 1917, be devoted to the payment of reparations.[1]

3. That the railroad system be transferred to a private corporation, managed by a board containing a strong foreign element.

4. That the holders of railroad bonds be protected by a foreign commissioner.[2]

It will be observed that these proposals were not designed to improve the efficiency of railroad operation in Germany, nor to separate the carriers from the state in order to protect railroad revenues, as earlier reforms had sought to do, but that the railroads were regarded simply as an asset which might serve as security for some form of promissory note without intolerable interference in the business or social or political life of the German nation. For its part, the German Imperial Government approved the proposals in principle, because it recognized that concessions must be made, and the state

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[1] *Reichs-Gesetzblatt 1917*, p. 329. This war tax was at the following rates:

Passenger tickets,	First class	16 per cent
	Second class	14 " "
	Third class	12 " "
	Fourth class	10 " "
Baggage		12 " "
Freight (except coal)		7 " "

The experts proposed, and the Dawes plan provided, that the proceeds of this tax for the year ending August 31, 1925, should be permitted to go to the Empire. In the following, or second reparations year, 250,000,000 gold marks were to be paid out of the tax yield to the agent for reparations payments, and the balance was to be delivered to the German Imperial Government. In the third and subsequent years, 290,000,000 gold marks were to be paid to the reparations agent, and the balance to the Imperial German Government.

Actually, the entire proceeds of the tax are paid by the railroads to the Imperial Finance Minister, who in turn pays 22,500,000 marks every month to the agent for reparations, and adds to this, if the receipts permit, a thirteenth monthly payment at the end of the year, bringing the sum made available for reparations up to the stipulated 290,000,000 (Report No. 4 of the Railroad Commissioner, 20 November, 1926).

[2] Sarter, Adolf, *Die Neue Deutsche Reichsbahn-Gesellschaft*, Berlin, 1924; Homberger, "Die Deutsche Reichsbahn-Gesellschaft und ihre Finanzen," *Archiv für Eisenbahnwesen*, 1925, p. 1; Annual report of the Deutsche Reichsbahn-Gesellschaft for the year 1925.

governments waived certain rights of objection which they possessed for the same reason.

The New German Imperial Railway Company

The law carrying the Dawes plan into effect in so far as it affected German railroads was passed by the Reichstag on the 30th of August, 1924.[1]

The first and most striking feature of the law was the creation of a huge railroad corporation, to be known as the "Deutsche Reichsbahn-Gesellschaft," or "German Imperial Railway Company." This was an operating, not an owning, company, to which the Empire conceded the exclusive right of operating the imperial railroads until December 31, 1964, or longer if at that date outstanding reparation bonds and preferred stock had not been discharged, repurchased, or repaid.

Mortgage Bond Issues

The new company was to issue the following securities:

1. Mortgage bonds to a nominal amount of 11 billion gold marks. These bonds were to be put out at once, they were to be secured by a first mortgage on all railway lands, rolling stock, and movable property belonging either to the Empire or to the company, they were to bear 5 per cent interest, and they were to be retired through the operation of a sinking fund of 1 per cent per annum.[2]

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[1] The Acts and agreements by which the plan of 1924 were made effective were the following: (1) Gesetz über die Deutsche Reichsbahn-Gesellschaft, vom 30 August, 1924 (*Reichs-Gesetzblatt*, 1924, p. 272); (2) Satzung der Deutschen Reichsbahn-Gesellchaft (*ibid.*, p. 281); (3) Gesetz über die Personalverhältnisse bei der Deutschen Reichsbahn-Gesellschaft (*ibid.*, p. 287); (4) Law agreeing to the Protocol of the London Conference (*ibid.*, p. 289); (5) Final Protocol, dated August 16, 1924, and signed by representatives of the various European governments interested, announcing the acceptance of the plan presented to the Reparations Commission on April 9, 1924, by the Committee of Experts (*ibid.*, p. 290); (6) Agreement between the Reparations Commission and the German government, under which the latter promised to take all appropriate measures for carrying the experts' plan into effect (*ibid.*, p. 294).

It is evident from this enumeration that the present organization of the German railroads is not a simple Act of the German parliament which that body can repeal, but that it is based upon international agreement.

[2] The annual payment by the company for the service of the bonds was limited, the first year, to 200 million gold marks; for the second year, to 595 million gold marks; for the third year, to 550 million gold marks, and for each subsequent year it was set at 660 million gold marks, or the 5 per cent plus 1 per cent referred to in the text. The large payment for the second year, that ending August 31, 1925, included a sum of 130 million gold marks which the company was expected to earn during the first year, but which it was not compelled to pay until the second. Allowing for this deferment, the amounts which the company was expected to charge against its income year by

The mortgage bonds were to be turned over to a trustee appointed by the Reparations Commission.[1] There was no counter payment, because the consideration for the bond issue was the cancellation of a national political debt, not the receipt of cash or property as in the case of an ordinary loan transaction. Interest and sinking-fund payments were guaranteed by and could be collected from the Empire, in case of company default. On the other hand, the company might redeem bonds more rapidly than at the rate of 1 per cent per annum if its net revenues permitted.[2]

It was contemplated that the Reparations Commission might sell the railroad first mortgage bonds to investors, and for this purpose the Commission was authorized to require their issue in any denomination that it desired, or to have them divided into different classes with different rights as to priority of charge, rate of interest, or repayment of capital, provided that the company's liabilities were not increased; the marketing of the bonds was, however, the affair of the Reparations Commission, not that of the company or of the German government.

Preferred Stock

2. Preferred stock to an amount of 2 billion gold marks. This stock was to carry the right to a cumulative preferential dividend, and was to be redeemed before the termination of the concession.[3] The

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year followed a regular progression of 330 million, 465 million, 550 million, and 660 million gold marks (Fourth Report of the Railroad Commissioner, 20 November, 1926, p. 6).

[1] This was the commission charged with the supervision and collection of German reparation payments growing out of the World War.

[2] It is obvious that the ordinary processes of foreclosure were of doubtful value in case of default upon the imperial railroad bonds. The real protection for the bondholders lay in the powers of the Railroad Commissioner, to be later described, and in the fact that the Dawes plan provided for the appointment of a Commissioner of Controlled Revenues, to whom was to be paid the entire receipts from alcohol, tobacco, beer, sugar, and customs taxes. Normally, after deduction of certain fixed sums for reparation purposes, it was the duty of this commissioner to hand over the balance of these tax receipts to the German government. But if the railways failed to make their due payments, and if the government failed to meet its guaranty, then the Commissioner of Controlled Revenues was empowered to intercept out of the tax receipts otherwise payable to the government, whatever sum was required to make up the full quota of the railway obligation (Annex No. 4 to the Report of the First Committee of Experts. Concession of the Working of the German Railways to a Company. Article V, Enforcement of Government Guarantee. See also Sir William Acworth, in *Railway Age*, November 1, 1924, p. 800).

[3] Any series of preference shares might be called by the management at the beginning of the sixteenth year after issue, or earlier if all reparation bonds had been earlier amortised or acquired. The redemption price for shares called within twenty-five years from the time when the company began to operate, was set at 120 per cent; that

conditions of issue were to be fixed by the company, and might differ for different series of shares, except that shares could not be sold at less than par, nor a higher dividend than 7 per cent be fixed without the consent of the German government. In practice, the rate of 7 per cent has been applied.

Unlike the reparation bonds, preference shares were to be sold on the market by the company itself, and three-quarters of the proceeds were to be for company use. The other quarter was to go to the German government, which might demand that at least this fraction, or 500,000,000 marks, be sold during the first two years and the entire proceeds turned over to the Empire.[1] The purpose of this reserved right was to enable the government to have recourse in part to the preference shares for payment of reparations to the Allied governments during the second reparations year.

Holders of preference shares were to be represented upon the Board of Management, as will presently be explained. They were also to be entitled to a supplementary dividend over and above their cumulative dividend equal to one-half of any dividend which might be declared upon the common shares.

Common Stock

3. Common stock to an amount of 13 billion marks. This stock was to be registered in the name of the Empire, or, if the Empire requested, in the name of a German state. In the latter case it was to serve as liquidation of the unpaid balance due certain German states, on account of the transfer of their railroads to the Empire in 1920. Generally speaking, however, the common stock was valueless, and its possession only of speculative importance. This was because it carried no right to redemption, and no voting privilege, while its prospects of a dividend consisted only in the right of its holders to demand two-thirds of any sum distributed after interest and sinking funds upon the first mortgage bonds, dividends

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for shares called during the next ten years at 110 per cent; and that for shares called after thirty-five years had passed, at 100 per cent.

[1] Up to the end of 1926, 881 million marks of preferred stock had been issued. The first 500 million of these were delivered directly to the imperial government, because of the impossibility of selling them on reasonable terms. Of the remainder, the Imperial Finance Minister has subscribed to, and holds, 252.5 million marks, and the Imperial Post Office 27.5 million marks. The intention of the Dawes Commission has not, therefore, been fulfilled, in so far as public sale of the preferred stock is concerned. The company has, however, the option of buying shares back from the imperial government at the price of issue within five years from the date of issue, and will presumably make use of this privilege, if market conditions warrant.

upon the preferred shares, and reserves for extraordinary expenditures and for the redemption of the preferred stock had been set aside.[1]

From the point of view of the authors of the Dawes plan, the separation of the German railroad system from the state, and its establishment as a distinct legal entity, unaffected by the financial necessities of the German government, was essential to the use of the German railroads as security for reparation payments, while the issue of railroad bonds, and, to a less degree, of preferred stock, provided a convenient machinery through which railroad earnings could be conveyed to the creditors of the German Empire. There remained, however, also the question of the management of the new railroad corporation so suddenly set up. It seemed evident that a hostile railroad administration could defeat the purpose of the elaborate financial organization just described by lowering or by failing to raise rates, or by indulging in extravagant expenditure until the German Imperial Railway became unable to pay interest upon the reparation bonds.

Sir William Acworth put the matter bluntly when he said that the German state, which had traditionally regarded the development of German industry and trade as its first duty, and had relegated the earning of a reasonable return on capital to the second place, could not be expected so to manage the railways as to earn all the net revenues which might reasonably be earned.

Upon the other hand, the experts who elaborated upon the Dawes plan had no desire to interfere unnecessarily with the operating organization of the German railways, nor to undo the work of consolidation accomplished by the Weimar constitution of 1919 and by the consequent railroad agreements of 1920. The compromise finally arrived at may be described as follows:

Board of Management

The German Imperial Railway Corporation differs from the ordinary private corporation under German or American law, in that its stockholders never meet. The governing body, subject to the law and to the company charter, is a "Board of Management," consisting of eighteen members, including a president, who must be of German nationality. Half of the members of the board are appointed by the government of the Empire, and half by the trustees representing the reparation board. The trustee half must contain at least four foreign members.[1] When the reparation bonds have been redeemed, the members until then appointed by the trustee will be replaced by members chosen by the government. Four of the seats on the board filled by appointees of the government are to be assigned to the holders of preference shares, in such manner that for each 500 million preference shares issued, one representative of these shares is entitled to a seat on the board. The board is to determine the manner in which the representatives of the preference shares are to be chosen, but the individuals selected must be of German nationality.[2]

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[1] The fact is to be emphasized that the common stock carried no right to redemption and that, therefore, the company was not obliged to accumulate a reserve to liquidate this stock at the time of the expiration of the company's concession. This circumstance has a very important influence upon the revenue which the company has annually to procure, and the rates which it has to charge. Stock of the character here described is known in Europe as "Genusscheine," or "Actions de jouissance."

The total bond and share capital of the Imperial Railway Company, amounting to 26 billion marks, was approximately equal to the items "cost of road," and "improvements and additions" accounts which formed the principal basis for the price paid by the Empire to the German states in 1920. See p. 629.

It is this Board of Management which combines the functions of the stockholders' meeting and of the board of directors of an ordinary undertaking, appointing the principal executive officers of the company, regulating salaries and wages, approving the company budget, and, generally, deciding questions of principle affecting the conduct of the company's affairs.[3] Its principal limitation, as compared with a stockholders' meeting, is that it cannot change the by-laws of the corporation. The directorate mentioned in the company statutes as subordinate to the board of management is not a second "board," as its name might imply, but rather consists of the chief executive officer of the company, together with certain of his departmental heads, and has no authority except that conferred by the company's own staff regulations.

[1] The four foreign members exercise special functions as follows: (1) They elect the Railway Commissioner (see p. 639); (2) at least two foreign members must consent before the corporation may issue any evidences of indebtedness other than the reparation bonds; (3) there must be at least one foreign member on the labor committee of the Board of Management.

[2] When at least three preference shareholders have been appointed, the chairman will be selected from among them. The whole of the eighteen members are required to be either business men of experience or professional railway men. No member of any legislature or of any government, whether federal or state, is eligible for appointment. The normal term of office of a member of the board is six years, and he is eligible for reappointment. The chairman of the board is elected each year by a three-quarters majority. A similar majority is required for the selection or recall of the chief operating officer (the Director-General), and for the issue of evidences of indebtedness other than the reparation bonds.

[3] The Director-General is elected for a period of three years. He must be of German nationality.

Railway Commissioner

In addition to the Board of Management, the company statutes provide for another officer known as the Railway Commissioner. This person is selected for three years by majority of the foreign members of the board of management. The Commissioner may take part in the meetings of the board, but has no vote. He has, however, complete authority to inspect and to call for reports and statutes, and he may bring to the attention of the board any measures which he thinks likely to endanger the interests of the holders of the reparation bonds. Such things are within his routine powers.

If, however, the company passes its interest payment at any interest date, then the Railway Commissioner's powers are suddenly increased. He may now (1) require the removal of the Director-General; (2) terminate expenditures which he considers unjustifiable; (3) order tariffs to be increased to the levels which he thinks reasonable. In the event that defaulted interest is not made good within six months, the Commissioner may even take over the operation of the railway, and in the last resort, after a decision by an "arbitrator," he may lease the railway, in whole or in part, to third parties. This authority appears to go to the utmost possible limit in protecting the interests of the foreign bondholders; and, thereby, the continuity of reparations payments in so far as the German Railways are concerned.[1]

Law of 1924 Subject to the Constitution

The provisions of the law of August 30, 1924, concerning the German Imperial Railway Company, and the statutes of that company itself are of first-class importance, because they determine the financial and administrative organization of the German state-owned railroads. The law of 1924 did not, however, supersede the constitution of 1919, and it is to be interpreted in harmony with constitutional provisions. It follows that the imperial government still reserves the right of regulation and control over both private railroads and over the German Imperial Railway Company, although in accepting the Dawes plan it has committed itself to certain policies and conferred certain powers which cannot be changed without the consent of the nations to which the credit of the state is pledged.

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[1] Disputes between the company or the German government on the one hand, and the reparations commission or the trustee or the railroad commissioner on the other, are to be decided by an arbitrator. The arbitrator is to be named by the president of the World Court, and if either of the interested parties request, he must be a national of a neutral country.

The actual extent of the authority which the German government proposes to exercise over private railroads was laid down in the law of January 3, 1920,[1] pursuant to Article XCV of the constitution. That relating to the Imperial Railway Company is contained in the law of August 30, 1924. Inasmuch as the Imperial Company operates substantially all railroads of general interest in Germany, our discussion will be limited to the regulatory powers of the state over the property of this undertaking.

How Far the Imperial Railway Company Is Subject to Regulation

The rights of control which the government reserves to itself over the Imperial Railway Company are stated in the Act of 1924 as follows:

> 1. *Right to require information.* The government may require the company to furnish all information of a financial nature and, within the limits of its rights of supervision, all information of a technical and administrative nature, provided that the company is caused no unnecessary expense. This right is more limited than the corresponding authority in, for instance, the United States, as it does not imply unlimited authority to examine the company's books. The only books of account to which the government has access are those concerning the balance sheet and profit-and-loss accounts which are kept at the main office of the company. It is doubtful whether a company may refuse information upon the ground of expense, but the government may, under some circumstances, be called upon to reimburse the company for the expense involved in supplying certain data.
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> 2. *Operation.* The government reserves the right: (a) to insure that the Imperial Railways are maintained and operated in a manner consistent with safety and public convenience; (b) to approve the permanent closing for traffic of a line or of an important station, or the introduction of new appliances upon an important scale, such as the extension or restriction of electric traction, or changes in the system of train protection; (c) to approve the abolition of any of the existing classes of passenger vehicles.

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[1] *Reichs-Gesetzblatt,* 1920, p. 13.

3. *Rates.* The government has a limited control over rates. It may approve or disapprove alterations in the methods of tariff application presented in the general tariffs, classifications, etc., and also the introduction, alteration, or withdrawal of international or exceptional tariffs or of any other special concessions in rates. It may call for a reduction in tariffs or any other change in tariff provisions which it considers necessary in the interest of national economy, provided that it does not prevent the company from earning a net return adequate to meet its obligations. If the company objects to a change or to a reduction, the question is referred to arbitrators, or if the company neglects to assert its rights, the Railway Commissioner can invoke arbitration.

4. *Construction.* The construction of new lines, the purchase of existing lines, and the conversion of a secondary line worked by the company into a main line, or *vice versa,* require the consent of the government. The government may require the company to build new lines of general interest, but if the company thinks that the new lines will not be profitable, or that they will compete unduly with its other properties, then the construction is to be 'on account of the national government,' which will share in the resulting gain or loss.

The regulatory power of the German government is exercised through the Imperial Minister of Transport. When it is remembered that, in addition to his right of control as a member of the government, this Minister appoints half, and, eventually, will appoint all of the members of the Board of Management of the Imperial Railway Company, the authority of the state over the German railway system will seem to be sufficiently complete, even though on the regulatory side alone it falls somewhat short of the power exercised by the Interstate Commerce Commission in the United States.[1]

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[1] Disputes between the company and the Ministry are to be adjudicated by a special German court, consisting of a presiding officer and two other members. The presiding officer is named by the president of the Supreme Imperial Court of Germany (*Reichsgericht*) for five years. The other members are appointed by the same officer, on nomination of the company and of the government, respectively, but each appointment is for a single litigation only. If it is contended that the decision of the Court imperils the service of the reparation bonds, appeal may be taken to arbitrators named by the president of the World Court.

Earnings and Expenses of German Railways

The following table sets forth the earnings and expenses of the German railway system between the 1st of April, 1920, and the 31st day of December, 1926:

EARNINGS AND EXPENDITURES OF THE GERMAN RAILWAYS, APRIL 1, 1920, TO DECEMBER 31, 1926

Period	Earnings from operation	Expenses of operation	Operating surplus or deficit	Total surplus or deficit, including interest charges
	(In billion paper marks)			
Year ending March 31, 1921	17.9	31.0	Def. 13.1	Def. 15.6
Year ending March 31, 1922	45.1	48.9	Def. 3.8	Def. 6.9
Year ending March 31, 1923	2,437.4	2,390.6	Sur. 46.8	Sur. 5.3
	(In quintillion paper marks)			
April 1, 1923, to November 14, 1923	33.4	100.9	Def. 67.5	Def. 67.5
	(In million gold or reichs marks)			
November 15, 1923, to March 31, 1924	1,234.1	983.0	Sur. 251.1	Sur. 7.7
April 1, 1924, to September 30, 1924	1,946.2	1,462.4	Sur. 483.8	Sur. 317.0
October 1, 1924, to December 31, 1925	5,668.7	4,849.9	Sur. 818.8	Sur. 153.1
January 1, 1926, to December 31, 1926	4,540.8	3,680.6	Sur. 860.2	Sur. 14.6

Between April 1, 1920, and November 14, 1923, the statistics of German railway revenues and expenditures are of an increasingly fantastic character, until they culminate in the extraordinary figures of the period between April and November, 1923. The extent of the deficits during these months was in part the result of the occupation of the Ruhr by French troops and of the inauguration of a policy of "Passive resistance" by the German government and population.[1] To a far greater extent, however, it was the consequence of a depreciation of the German currency which was so rapid as to conceal completely fluctuations in receipts due to changes in the volume of railroad operations. Indeed, between April and November, 1923, the railroad income from operations upon the exchange exceeded the total receipts from the transportation of passengers and freight. No ordinary enterprise could have commanded revenue to meet the deficits of these years. The necessity for continued railroad operation was so clear, however, that the imperial government subsidized the Reichsbahn in an amount sufficient to offset the deficits of 1920-21 and 1921-22, while the deficit of 1923 was met in part by an imperial subsidy and in part by emergency certificates or notes which the railroad administration issued on its own account instead of paying cash.

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[1] The first "sanctions" in the Ruhr were applied on March 7, 1921. Allied troops did not, however, enter the Ruhr on a considerable scale until January 8, 1923. The French-Belgian "Regie" for the operation of the railroads in occupied territory was organized on March 1, 1923. Passive resistance was given up on September 26, 1923; on December 10, 1923, a *modus vivendi* was arrived at between the "Regie" and the German Imperial Railways, and between October 19 and November 16, 1924, the railroads operated by the "Regie" were surrendered to the German Imperial Railway Company (Anon. "Ruhr-besetzung und Reichsbahn," *Archiv für Eisenbahnwesen*, 1926, p. 1; Goltermann, "Abbau der Eisenbahnregie," *Zeitung des Vereins Deutscher Eisenbahnverwaltungen*, 1925, p. 153).

Results of Operation for 1925 and 1926

After 1923 the railroads enjoyed the advantages of a stabilized currency, and their statements of annual revenues again have the significance which statistics of this type have in other countries. While comparisons between different years are made somewhat difficult by variations in the length of the operating periods, a little calculation will show that the monthly operating surplus, which was 54.6 million marks during the fifteen months ending December 31, 1925, had grown to 71.7 million marks during the twelve months ending December 31, 1926. The decline in the total surplus from 1925 to 1926 was due to increased payments on account of reparation bonds, to an enlarged dividend upon the preferred stock, and to the establishment of certain reserves. Actually, the distribution of operating surplus for these last two years has been:

PROFIT AND LOSS ACCOUNT OF THE GERMAN IMPERIAL RAILWAYS

(In millions of reichsmarks)

Item	1913	1925	1926
Operating surplus for the year	852.5	818.8	860.2
Interest and amortization of reparation bonds		399.3	574.3
Interest and amortization of miscellaneous indebtedness	450.3		0.1
Reserves to secure service of the indebtedness of the company[1]		113.4	90.8
Dividends on preferred stock		3.0	40.4
Extraordinary expenditures on capital account	294.0		
Reserves for depreciation, new construction, etc.		150.0	140.0
Contributions for general state purposes	108.2		
Carried to surplus account		153.1	14.6

[1] Set at 2 per cent of operating income until a reserve of 400 million gold marks is attained.

The table shows the progress of bond interest from 399 to 574 million marks between 1925 and 1926, the increase in preferred stock dividend from 3 to 40 million marks, and the accumulation of important reserves which in part, it is true, represented charges for depreciation,[1] but which also included large sums set aside for the equalization of earnings which can be drawn upon in later years. In estimating the importance of these figures, moreover, it is to be remembered that they take no account of the proceeds of the transportation tax; for the Imperial Railway Company regards itself only as a collection agent with respect to this tax, and passes neither receipts nor payments through its revenue accounts.

Ability of the German Railways to Meet Reparations Payments

The vital question with regard to the German railways is now whether they will be able to provide an annual revenue for reparation purposes which will cover (1) 660,000,000 marks for interest and amortization of the reparation bonds; (2) a maximum of 140,000,000 marks for dividends at 7 per cent upon the company's authorized preferred stock, together with whatever financial provision may be necessary for the retirement of this stock; and (3) a maximum of 290,000,000 marks to cover the transportation tax. During 1925 and 1926 the necessary moneys have been found. The problem has been simplified up to the present time, however, by the fact that only 881,000,000 marks of preferred stock have been issued, and by the further circumstance that the maximum interest on the reparation bonds will be payable for the first time during the year ending August 31, 1928. For future years an equilibrium between receipts and expenses may not be so easy to attain.

Argument of the Dawes Commission

The argument of the experts for the Dawes Commission with respect to the earning power of the German railways rests upon two main propositions:

The first proposition is that German railways may fairly be expected to earn 3 or even 4 per cent upon an invested capital of 26 billion marks. The latter of these figures will provide sufficient revenue for bond interest, preferred stock dividend, and transport tax; the former will almost suffice for interest and dividends. This revenue level has already been reached.

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[1] In 1926 the charge for depreciation was 70 million marks.

The second proposition is that the ratio of expenses to earnings on the German railroad system should not exceed 80 per cent. An operating ratio of 80 per cent upon a gross revenue of 4 billion marks will yield 800 million marks of net earnings, which will suffice to cover bond interest and dividends upon the preferred stock. This proposition is based upon experience in England and in America, upon the admittedly abundant supply of relatively new German railway rolling stock, upon the probability that the number of railroad employees can be reduced,[1] and upon the assertion that the increase in the cost of living in Germany since the war, as compared with other countries, makes it unnecessary to advance wages to the extent found desirable in England and in America.[2] The rate of 80 per cent was not reached in 1925 or in 1926, but it was so nearly attained in the latter year, in spite of considerable increases in wages, that the expectations of the experts seem likely to be fulfilled.

Restrictions Upon the Reduction of Railroad Rates

German publicists and railroad men who are skeptical of the permanent success of the present arrangement, or hostile to its implications, concede that revenues may be sufficient for a time, but believe that the Dawes plan allows insufficient margin for development, and that it hampers the economic rehabilitation of Germany by the obstacles which it places in the way of reductions in railroad rates.

There is no doubt but that German rate reductions are made more difficult, both by the terms of the law of 1924 relating to the Reichsbahn-Gesellschaft, and, temporarily, by the Versailles treaty itself. The law of 1924 forbade reductions which imperil the payment of interest upon the reparations bonds or of dividends upon the preferred stock. The powers of the Railway Commissioner in this regard will be remembered.

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[1] At the close of the war the German railways added largely to their personnel for the avowed purpose of providing employment for returning soldiers. Actually, the number of employees, which was 692,714 before the war, had increased to 1,009,420 in March, 1926. By February, 1927, the number had been again reduced to 652,617. This was the lowest point reached, and since March the number of employees has somewhat increased (fourth and fifth Reports of the Railroad Commissioner, 20 November, 1926, and 1 June, 1927).

[2] Negotiations are, however, pending, which involve very substantial increases in pay.

Provisions of the Treaty of Versailles

As for the treaty of Versailles, it interfered with rate reduction through sections 325, 326, 365, and 369. These sections required the German railroads to apply to goods which came from the territories of the Allied and Associated Powers, or which passed through Germany in transit with origin or destination in the territory of such powers, the most favorable treatment applied to goods of the same kind, under similar conditions of transport, anywhere in Germany. They declared, moreover, that seaports of the Allied and Associated Powers were entitled to all favors and to all reduced rail and inland water tariffs introduced for the benefit of any German port. Such requirements intentionally imposed a handicap upon the effectiveness of German railroads in stimulating German competition with the industries of other countries.[1]

It was fortunate for Germany that Article 378 of the Versailles treaty also provided that, failing action by the Council of the League of Nations, no Allied or Associated Power could claim the benefit of any of these stipulations after five years had elapsed, in behalf of any portion of its territory in which reciprocity was not awarded. The five years have now passed, and the German Reichsbahn-Gesellschaft has accordingly restored many of the special seaport tariffs which were canceled in 1919, while it has also reintroduced a number of commodity and transit rates designed to encourage German business or to attract to German railroads traffic between foreign points of origin and destination which might pass over German lines.

Conclusion

On the whole, the experience of the German Imperial Railway Company under the Dawes plan has been encouraging, and there is reasonable ground for hope that this company will be able to meet and to overcome the undoubted difficulties with which it has to contend. At the same time the margin upon which it has to work is not yet considerable, the traffic moving over German railways is only slowly increasing, and there is real danger lest railway income be impaired in the near future by increases in wages, by agitations for reductions in rates, and by the purposeful development in Germany of means of transportation which are not subject to the limitations of the reparations agreement. The eventual success of the railways will depend upon developments which it is not yet possible clearly to foresee, such as the growth of inland water and automobile transportation, and, most important of all, upon the ability of German industry to reëstablish itself in the face of a hostile world.

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[1] See Stieler, Karl, *Grundfragen aus dem Gebiete des Deutschen Eisenbahnwesens*, 1925.

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CHAPTER XXXIII

REGULATION OF INLAND WATERWAYS

Statutory Control of Commerce on Inland Waterways—the Secretary of War

In the United States, statutory control of carriage over inland waterways is exercised through a series of acts and administered by a variety of agencies, as follows:

Secretary of War. The Secretary controls the federal service upon the Mississippi and Warrior Rivers. This is an instance of government operation of inland waterway facilities, administered, since 1924, through the "Inland Waterways Corporation." [1]

Control by Executive Departments and Bureaus

In addition to the War Department, there are a number of executive departments or bureaus of the federal government which possess limited authority over inland waterways. These agencies include the Bureau of Navigation, the Steamboat Inspection Service, the Bureau of Public Health, the Department of Commerce, and the Corps of Engineers of the United States Army, acting under the direction of the Chief of Engineers and of the Secretary of War. Regulation of this type is concerned with the protection of public health through quarantine regulations, the policing of harbors, and the protection of the lives and property of passengers and shippers. It does not directly attempt the control of rates and traffic, although it affects the conditions under which freight and passenger business is carried on.

Powers of the Shipping Board

The Shipping Act of 1916 undertakes to regulate interstate commerce from port to port upon the Great Lakes, as well as coastwise, and to control, in some respects, foreign trade. The Shipping Board, created by this Act and enlarged and strengthened by the Merchant Marine Act of 1920, administers the clauses of the Shipping Act requiring reasonable rates and forbidding discrimination. It approves or disapproves agreements between water carriers. It compels the filing of maximum rates on interstate shipments. The Board has authority to require the submission of records or reports and the attendance of witnesses. It may make investigations and issue orders. It may approve or disapprove the sale of American vessels to noncitizens or the transfer of vessels documented under the laws of the United States to foreign registry. In brief, the Shipping Board exercises a control over American ships upon the Great Lakes, as over American vessels engaged in foreign trade, which is in some respects more direct and effective than that exercised by the Interstate Commerce Commission over joint routes and rates to which rail and water carriers are parties.

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[1] See Chapter II.

In actual practice, however, the Shipping Board has paid comparatively little attention to the regulation of inland waterways. This is partly a reflection of the slight development of the regulatory side of the Board's activities, and partly the result of its concentration upon the field of foreign trade. Up to June 30, 1926, indeed, only 32 formal complaints had been filed with the Board during the ten years of its activity under the Shipping Act of 1916 and the Merchant Marine Act of 1920, and of these the greater number were concerned with practices growing out of coastwise or foreign commerce. The principal routine work of regulation has consisted of the receipt and filing of tariffs, but the significance even of this has been impaired by the fact that maximum rates have been filed below which the carriers have felt free to go, and not actual or maximum and minimum rates. Finally, the importance of the Board's regulatory control over inland water transportation has been diminished by the presence of a government-operated barge line upon the Mississippi and the Warrior Rivers, by the insignificance of other canal and river movements with the exception of those upon the Great Lakes, and by the authority which the Interstate Commerce Commission exercises over certain varieties of water transport.

The Interstate Commerce Commission and Inland Waterways

The Act to Regulate Commerce applies to common carriers engaged in the transportation of passengers or property partly by railroad and partly by water when both are used under a common control, management, or arrangement for a continuous carriage or shipment. The language used in the Act does not mean, it is true, that a common carrier by water which enters into a joint arrangement with a carrier by rail on a particular business thereby subjects its entire business to Commission control. This is an interpretation of the law which has been approved in connection with the keeping of accounts and the rendering of reports to the

Commission,[1] for the reason that the Commission needs complete information with respect to the entire business of a water carrier in order to exercise even a limited control; but apart from accounts and reports, the Commission has ruled that the effect of a joint arrangement between rail and water lines is to bring the traffic covered by the arrangement, and that traffic alone, under Interstate Commerce Commission control.[2]

Yet even this restricted interpretation has the effect of vesting in the Commission the power to fix maximum rates upon joint rail and water hauls, the authority to consider questions of discrimination to which a water line, in connection with rail carriers, may be a party, and the right to insist upon the publication of and adherence to established rates. It would be frequently impossible for the Commission to deal effectively with railroad-rate adjustments unless it had at least this much authority over transportation service which railroad and waterway undertake jointly and successively to provide. And it can be argued that no hardship is imposed upon the water line, for there is nothing in the law at present under discussion which interferes with water transportation, unless it is operated under some arrangement with a common carrier by rail which gives it an advantage over water carriers that have no rail connection at all.

Through Routes and Joint Rates Under Section 15 of the Interstate Commerce Act

The authority of the Interstate Commerce Commission was extended, in 1906, by the grant of power to establish through routes and joint rates, and to prescribe divisions of rates, as well between rail and water as between different rail carriers. This grant was accomplished by amendment to Section 15 of the Interstate Commerce Act; it was limited, in 1906, by the proviso that it should be exercised only when no reasonable or satisfactory route existed between the points which it was desired to connect. In 1910, the Mann-Elkins Act removed this particular limitation, but added a stipulation that, in prescribing a through route, no company should be compelled to short-haul itself. The 1910 amendment was again changed in 1920 by excepting cases where one of the parties to the through route was a water line, but meanwhile the matter of through routes and joint rates by rail and water carriers had been covered by other legislation to which we shall presently refer. Joint rates, whether established voluntarily or prescribed, must of course be filed with the Interstate Commerce Commission, and kept open to public inspection to the same extent as other rates subject to the Act to Regulate Commerce.

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[1] Interstate Commerce Commission, *v.* Goodrich Transit Company, 224 U. S. 194, 1912.

[2] In the Matter of Jurisdiction over Water Carriers, 15 I.C.C. 305, 1909.

Panama Canal Act of 1912

This brings us to the Panama Canal Act of 1912. This important legislation, passed in anticipation of the opening of the Panama Canal,[1] was primarily designed to organize the administration of the Canal and of the Canal Zone and to fix the tolls which should be charged for the use of the new waterway. The Panama Act did, however, two other things, both of which had far-reaching consequences.

1. In the first place, the law forbade any railroad or other common carrier subject to the Act to Regulate Commerce to own, lease, operate, or control, or have any interest whatsoever in any common carrier by water operated through the Panama Canal or elsewhere with which the controlling company competed for traffic. To this sweeping prohibition exception was made of services not operated through the Canal which the Commission might hold to be operated in the interest of the public and not to prevent or reduce competition.[2] Such services, when approved, were to file their rates with the Interstate Commerce Commission, and were to be subject to the Act to Regulate Commerce in the same manner and to the same extent as were the railroads which controlled them.

Physical Connection Between Rail and Water Carriers Under the Panama Canal Act of 1912

2. In the second place, the Interstate Commerce Commission was given jurisdiction over interstate rail and water transportation from one point to another in the United States in important particulars related to inland water transportation:

a. The Commission was authorized to establish through routes and maximum joint rates between interstate rail and water carriers and to determine all the terms and conditions under which such lines should be operated in the handling of interstate rail and water traffic. This authority was in addition to that conferred by section

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[1] 37 Stat. L. 560, 1912.

[2] Section 11.

15 of the Act to Regulate Commerce,[1] and was not subject to the limitations formulated in the Mann-Elkins Act of 1910.

b. The Commission was empowered to require a physical connection to be established between the lines of a rail and those of a water carrier. The language of the Act upon this point was as follows:

> "To establish physical connection between the lines of the rail carrier and the dock of the water carrier by directing the rail carrier to make suitable connection between its line and a track or tracks which have been constructed from the dock to the limits of its right of way, or by directing either or both the rail and water carrier, individually or in connection with one another, to construct and connect with the lines of the rail carrier a spur track or tracks to the dock. This provision shall only apply where such connection is reasonably practicable, can be made with safety to the public, and where the amount of business to be handled is sufficient to justify the outlay.
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> "The commission shall have full authority to determine the terms upon which these connecting tracks, when constructed, shall be operated, and it may, either in the construction or the operation of such tracks, determine what sum shall be paid to or by either carrier. The provisions of this paragraph shall extend to cases where the dock is owned by other parties than the carrier involved."

The wording of the Panama Canal Act with respect to physical connection between rail and water carriers gave the Commission power to require the provision of adequate interchange facilities between rail and water lines. It represented, therefore, a substantial and probably a beneficial addition to existing law.

Regulation by the Interstate Commerce Commission—Reasonableness of Rates

Up to the present time, the active agent in the regulation of inland water transportation has been the Interstate Commerce Commission, and the principal purposes of this regulation have been two.

In the first place, the Commission has extended to waterway traffic subject to its jurisdiction the principles of reasonableness and equality of rates that it has long applied to railroad hauls. In doing this, the Commission has been hampered by limits set upon its authority. It has no jurisdiction over port to port rates[1] except over railroad-controlled water lines. It may not prevent the abandonment of steamer services.[2] It may not fix a minimum rate even on a through shipment when one of the carriers upon the route is a water line.[3]

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[1] The clauses referred to were enacted as amendments to Section 6 of the Interstate Commerce Law.

Ocean and Rail Transportation

These limitations have been at times inconvenient. On the other hand, it is to be remembered that the Commission has a large degree of power over transportation conducted partly by water and partly by rail, and this power it has freely exercised. Most notably, the Commission has acted in the case of a great variety of ocean and rail shipments passing between the North Atlantic seaboard and interior points in the South or West. Shipments of this type, where westbound, are carried by steamer from New York or New England to Norfolk, Savannah, New Orleans, or to some other port upon the South Atlantic or Gulf seaboards, whence they proceed by rail to interior destinations. The traffic is handled under through rates, which are filed with the Commission and are subject to its control. Sometimes a single commodity is involved, sometimes a regional rate adjustment is prescribed in which rail-and-water are related to all-rail rates between the same points of origin and destination.[4] Eastbound the routes are similar, and the competitive problem is essentially the same.

Lake and Rail Transportation

The Commission has also rendered decisions in a number of rail-and-lake cases. In 1915, for instance, it refused to allow a general increase in through rates from points west to the Illinois-Indiana state line to trunk-line and New England territories to which steamboat companies upon the Great Lakes were parties.[5] All-rail rates between Western and Eastern points had been recently increased, and the lake lines desired to raise their rail-and-lake rates also. The Commission would not consent, because it thought that the differential between all-rail and part-water rates between the West and the East might properly be enlarged. In 1917, however, water carriers showed that their expenses had notably increased, and the Commission expressed willingness to approve increases in joint rail-and-water rates up to the level of all-rail rates.[1] Three years later, in 1920, the Commission again authorized boat lines to increase their rates, this time as part of proceedings in which railroad rates all over the country were advanced.[2]

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[1] Corona Coal Co. *v.* Secretary of War, 69 I.C.C. 389, 1922.

[2] Routing between Texas Points, 91 I.C.C. 455, 1924.

[3] Rail and Water Rates from Atlantic Seaboard, 63 I.C.C. 267, 1921.

[4] A Commission order of this latter type was sustained by the United States Supreme Court in Chicago, Rock Island, and Pacific Railway Co. *v.* United States, April 11, 1927.

[5] Rates *via* Rail-and-Lake Routes, 37 I.C.C. 302, 1915.

Apart from these general proceedings, the Commission has considered the reasonableness of joint rail-and-lake rates in a number of specific instances, sometimes approving, and sometimes disapproving, according to the evidence in each case. It has also occasionally considered the reasonableness of joint rates to which river steamships were parties.

Relative Rate Adjustments to Which Water Lines Are Parties

Mention may, finally, be made of cases in which the Commission has considered relationships between competing rail-and-lake routes as well as the absolute reasonableness of charges. Thus in 1917 the Interstate Commerce Commission ruled that it was not unreasonable for the rate on wheat from Minneapolis to New York *via* Milwaukee or Chicago to be greater than that *via* Duluth, in view of the longer water and shorter rail haul in the latter case.[3] In 1920 it ruled that, in advancing rates, the carriers should preserve a parity between Chicago and Duluth on business from the East.[4] Still again, in 1921, the Commission declared that the rail-and-lake rate from New York to Chicago need not be made the measure of the rate from New Orleans to Chicago.[5]

These cases involved primarily, though not entirely, the competition of carriers. But the Commission has prescribed the difference which shall exist between the rail-lake-rail route from New York to Minneapolis and the rail-lake route to Duluth.[6] It has considered the relationship which should exist between rates to Minneapolis and those to La Crosse, Wisconsin, and Winona and Red Wing, Minnesota,[7] and it has used its authority over lake-and-rail rates to control the charges from trunk-line territory to cities upon the upper Mississippi River between Dubuque and Keokuk, Iowa, as compared with charges to cities upon the same river from Quincy, Illinois, to St. Louis, Missouri, inclusive.[1]

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[1] The Fifteen Per Cent Case, 45 I.C.C. 303, 325, 1917.

[2] Increased Rates, 1920, 58 I.C.C. 220, 253, 1920.

[3] Bay State Milling Co. *v.* Transit Corporation, 43 I.C.C. 338, 1917.

[4] Increased Rates, 1920, 58 I.C.C. 220, 253, 1920.

[5] Coffee from Galveston and other Gulf Ports, 64 I.C.C. 26, 1921.

[6] Second Duluth Case, 46 I.C.C. 585, 1917; Authority to Increase Rates, 58 I.C.C. 489, 1920.

[7] La Crosse Chamber of Commerce *v.* G. L. T. Corporation, 89 I.C.C. 386, 1924.

Here we have instances of market competition and the rivalry of competing cities which closely resemble other cases in which only rail carriers are involved. The Commission was upon familiar ground in dealing with such problems, and, indeed, it must regulate rail-and-water shipments with respect to rate relationships consistently with its action with reference to all-rail carriage if any considered policy of relative transportation charges is to be enforced.

Competition Between Rail and Water Carriers

We now pass to another general purpose of the regulation of inland waterways which is distinct from the purpose that has just been stated and illustrated. It is to prevent the elimination of water carriage by certain forms of unfair competition. Competition of this improper sort is apprehended from rail carriers, and the forms that it is expected to take are (1) localized reductions in railroad rates at points where rail and water services compete; (2) the purchase by railroads of financial control of competing water carriers; and (3) the refusal by rail carriers to coöperate with water carriers in handling traffic which seeks to move to destination over a combined rail-and-water haul.

The clause in the Interstate Commerce Act which attempts to prevent specialized and temporary reductions in railroad rates for the purpose of destroying competing water carriers reads as follows:

> "Wherever a carrier by railroad shall in competition with a water route or routes reduce the rates on the carriage of any species of freight to or from competitive points, it shall not be permitted to increase such rates unless after hearing by the Interstate Commerce Commission it shall be found that such proposed increase rests upon changed conditions other than the elimination of water competition."

This language was inserted in the Mann-Elkins bill of 1910 shortly before its passage in the Senate, on motion of Senator Burton of Ohio.[2] As originally presented and approved, the Burton amendment also vested in the Interstate Commerce Commission the right to prescribe minimum railroad rates on lines competing with waterways whenever, in its opinion, the object of the railroads in reducing rates was to destroy waterway competition: these additional phrases were, however, taken out in conference,[1] and the section was passed in its present form. Senator Burton was of the opinion that the adoption of an amendment of the sort which he submitted to the Senate was absolutely essential to the profitable utilization of a large share of the waterways of the country, including the Mississippi River, and the Senate, tired by a long debate on the subject of rail and water competition as expressed in "long-and-short-haul rate-making," agreed with only one dissenting vote.

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[1] Railroad Commissioners of the State of Iowa *v.* A. T. & S. F., 46 I.C.C. 63, 1917.

[2] *Congressional Record*, June 1, 1910, vol. xlv, part 7, pp. 7202–7203.

In actual practice, the clause has proved unnecessary, especially since 1920, when the Interstate Commerce Commission received authority to fix a minimum railroad rate. Moreover, the difficulties inherent in its application have been so great that the courts and the Commission have failed to enforce it upon no less than three separate grounds.

In the first place, the Interstate Commerce Commission has pointed out that the primary purpose of the law itself is to encourage water competition. This being the case, the carriers are rather to be encouraged to raise their rates at competitive points than to continue them upon a level that makes the competition of boat lines impossible. It follows that a railroad which has reduced its rates at certain stations to destroy a competing water service should be urged to raise them, not prevented from ever doing so.

The Interstate Commerce Commission has also held that rail carriers are not only not required, but that they are forbidden to continue low rates to points which have once enjoyed water competition when the competition has ceased, unless, indeed, they reduce their rates to other points so as to preserve a proper relationship, for the continuance of low rates under such conditions will produce a discrimination which the Act to Regulate Commerce makes unlawful.[2]

Finally, the United States Supreme Court has ruled that carriers which quote lower rates to water competitive points than to intermediate destinations with the approval of the Commission may subsequently raise these rates when water competition disappears in spite of the section now under discussion, because the law does not apply to reductions made under Commission authority.[3]

The result of these various arguments and interpretations has been that the particular piece of legislation just described has proved of negligible importance.

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[1] Conference Report on S. 6737, *ibid.*, June 14, 1910, vol. xlv, part 8, pp. 8026, 8029.

[2] In the Matter of Reopening Fourth Section Applications, 40 I. C. C. 35, 1916.

[3] Skinner and Eddy Corporation *v.* United States, 249 U. S. 557, 568, 1919.

Purchase of Water Lines by Railroad Carriers

There are two federal statutes which relate to the purchase of competing water lines by railroad carriers. One of these is the Clayton Anti-Trust Act, which forbids corporations engaged in commerce to acquire the shares of other corporations engaged also in commerce, where the effect of the acquisition is to lessen competition.[1] This statute has not yet affected rail-and-water relations to any significant degree. The other and most important statute bearing upon these matters is the Panama Canal Act of 1912. We have already stated the terms of this law; we may now return to the subject to describe its legislative history and to discuss its application.

Legislative History of the Panama Canal Act

Section 11 of the Panama Canal Act of 1912, as originally introduced in the House of Representatives, contained two more or less extraneous clauses, one relating to the ownership of shipping lines passing through the canal, and the other to the quotation of through rail and water rates.

The section relating to ownership read as follows:

> "From and after the first day of July, 1913, it shall be unlawful for any railroad company or other common carrier subject to the act to regulate commerce to own, lease, operate, control, or have any interest whatsoever (by stock ownership or otherwise, either directly, indirectly, through any holding company, or in any other manner) in any common carrier by water with which such railroad or other carrier aforesaid does or may compete for traffic; and in case of the violation of this provision each day in which such violation continues shall be deemed a separate offense." [2]

The clause quoted was passed by the House with only three minor amendments, one advancing the date of application of the law to July 1, 1914, another adding the words "by stockholders or directors in common" to the list of devices for common control listed in the bill, and still another conferring upon the Interstate Commerce Commission jurisdiction to determine questions of fact.

Proposed Senate Substitutes

The Senate Committee on Interoceanic Canals, to which the bill was referred after passage by the House, reported a substitute wording as follows:

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[1] 38 Stat. L. 730, 731–732, 1914, Sec. 7.

[2] *Congressional Record.* March 16, 1912, vol. xlviii, part 4, p. 3492.

> "That no ship owned, chartered, operated, or controlled by a railroad company, or in which any railroad company has any interest whatsoever (by stock ownership or otherwise, either directly or indirectly, through any holding company, or by stockholders or directors in common, or in any other manner), shall be permitted to enter or pass through the Panama Canal if engaged in the coastwise trade between ports of the United States. That any ship of American registry, however owned or controlled, shall be permitted to operate through the canal in transoceanic trade to and from Oriental or European countries; said vessel on its way to and from said foreign countries shall be permitted to do a coastwise trade between ports of the United States and intermediate foreign ports: *Provided*, ... That no such railroad owned or controlled ship shall pass through the canal unless at least 50 per cent of its cargo, in tonnage, is destined to or shipped from Oriental or European ports." [1]

The clause proposed in the Senate directed its prohibitions against the owned ships instead of against the owning companies, in an attempt to reach the case of vessels controlled by foreign railroad corporations not amenable to American laws. Senators pointed out, however, that a railroad company might purchase a few shares of the stock of a shipping company with the deliberate purpose of rendering it impossible for the latter's ships to pass through the canal. The Senate, therefore, rejected the substitute offered by its own committee. It did, however, approve an amendment limiting the prohibitions of the statute to carriers using the Panama Canal,[2] and in this form, with some minor changes, the Senate adopted the wording proposed by the House.

Conference Report

The House and Senate conferees agreed to eliminate the limitation to the operation of the bill that the Senate had proposed, and voted, further, to add the following clause:

> "If the Interstate Commerce Commission shall be of the opinion that any such existing specified service by water other than through the Panama Canal is being operated in the interest of the public and is of advantage to the convenience and commerce of the people, and that such extension will neither ex-

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[1] *Congressional Record*, August 9, 1912, vol. xlviii, part 11, pp. 10555–10556.

[2] *Ibid.*, August 16, 1912, vol. xlviii, part 11, pp. 11132–11133.

> clude, prevent, nor reduce competition on the route by water under consideration, the Interstate Commerce Commission may, by order, extend the time during which such service by water may continue to be operated beyond July 1, 1914. In every case of such extension the rates, schedules, and practices of such water carrier shall be filed with the Interstate Commerce Commission and shall be subject to the act to regulate commerce and all amendments thereto in the same manner and to the same extent as the railroad or other carrier controlling such water carrier or interested in any manner in its operation."[1]

In this form, the clauses of the Panama Canal Act relative to railroad control of competing water carriers were enacted into law.

Act Not Limited to Traffic Through the Canal

This summary of legislative history shows clearly that Congress consciously undertook, in 1912, to regulate the relations between railroads and water carriers generally in interstate commerce and not merely to confine itself to cases where use of the Panama Canal was involved. Not only this, but Mr. Adamson, in reporting the original bill to the House of Representatives, expressed the same point of view clearly when he said that the apprehension of railroad-owned vessels driving competition from the canal might or might not be exaggerated, but it was certain that the evil already existed in the coastwise trade upon both coasts, as well as on our lakes and rivers.[2]

The Interstate Commerce Commission Exercises Authority Over Car Ferries

In accordance with this view the Interstate Commerce Commission has assumed jurisdiction over a considerable number of services which have nothing at all to do with the canal. The Commission has, for instance, allowed rail carriers to continue to own and operate a number of ferry lines managed as parts of combined rail and water systems. The most notable of these cases have been, perhaps, those involving car ferries, mostly upon the Great Lakes. Thus the Pennsylvania Railroad and the Canadian Pacific controlled a car ferry between Ashtabula, Ohio, and Port Burwell, on Lake Erie. It was used mainly for coal cars and obviated a 200-mile détour.[3] Similarly, the Père Marquette operated ferries across the Detroit and St. Clair Rivers;[1] the Grand Trunk Railway controlled a car ferry across the southern end of Lake Michigan; and the Buffalo, Rochester, and Pittsburgh Railway owned stock in the Ontario Ferry Company, which operated a steam vessel between Genesee Dock, New York, and Cobourg, Ontario, across Lake Ontario.[2] There were many instances of railroad control of the type of services illustrated by the examples which have been mentioned; and certainly the advantages of continued common control in such cases were compelling.

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[1] *Ibid.*, August 16, 1912, vol. xlviii, part 11, p. 11132.

[2] *Ibid.*, March 16, 1922, vol. xlviii, part 4, p. 3495.

[3] 34 I. C. C. 47, 1915.

Summer Boat Lines and River Services

The Commission has also stepped in to protect the carrier in the case of several summer boat lines. The Lake Tahoe Railway and Transportation Company ran one of these upon Lake Tahoe, in the Sierras;[3] the Boston and Maine operated a boat upon Lake Winnepesaukee, New Hampshire;[4] and the Maine Central connected its terminus on the Maine coast with near-by harbors by means of a steamship line.[5]

Still again, the Commission has had to consider instances of river competition. Thus the Central Pacific Railway conducted a service upon the Sacramento River. Below Sacramento the steamers handled passengers, general freight, and, in season, large quantities of fruit.[6] Above Sacramento a good deal of grain presented itself.[7] In the case of the Central Pacific, the Interstate Commerce Commission allowed the railroad to maintain its control over the water carrier, but it was less lenient in another complaint involving steamer service upon the Columbia and Willamette Rivers. In the Northwest the owning company was the Spokane, Portland, and Seattle Railway. The navigation company operated two steamboats between Portland and The Dalles, Oregon. The Commission looked into the history of navigation upon the Columbia and Willamette Rivers, and expressed the opinion that railroad ownership of an operating boat line would keep out competition. It followed that the railroad and the boat line were required to be divorced.[8]

The Great Lakes

Finally, the Commission has dealt with the situation upon the Great Lakes. Apart from ferry lines, there were, in 1915, at least seven transit or transportation or similarly entitled companies which operated Lake vessels under the general control of the New York Central, Pennsylvania, Erie, Lehigh Valley, and other railroad companies. The boat lines operated as far west as Duluth and Chicago, and as far east as Buffalo. One line, the Rutland Transit, sent boats through Lake Ontario. All together, the railroad-owned boat lines dominated the situation to the extent of possessing an effective monopoly.

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[1] 34 I. C. C. 86, 1915.

[2] 34 I. C. C. 54, 1915, 34 I. C. C. 52, 1915.

[3] 33 I. C. C. 426, 1915.

[4] 40 I. C. C. 565, 1916.

[5] 40 I. C. C. 272, 1916.

[6] 34 I. C. C. 174, 1159.

[7] 34 I. C. C. 648, 1915.

[8] 33 I. C. C. 462, 1915.

It was evident that there were advantages in the arrangement that existed in 1915. Joint ownership of rail and water carriers serving the Great Lakes route reduced terminal expenses at points of interchange, prevented duplication of records, and made for regularity and continuity of service. But there were disadvantages also, and the Commission was able to point out that after 1900, first class lake-and-rail rates from New York to Chicago had steadily advanced.[1] Carriers might have gained from through rate and traffic arrangements between railroads and steamships, but the public had not. Hence the Commission took the view that joint control was contrary to the public interest and should cease.

Effect of Separating Rail and Water Lines

Some apprehension was expressed regarding the effects of the Interstate Commerce Commission decision of 1915. After it was rendered, the rail carriers transferred sixteen of their Lake boats to transatlantic service,[2] and sold thirty-three vessels to a newly organized independent company known as the Great Lakes Transit Corporation.[3] This had the effect of terminating the through routes to which the railroad-owned boat lines were parties. Moreover, the railroads also undertook to cancel through rates with other independent steamship lines, alleging that the cost of transfer of freight between rail and boat was so great that it was preferable to have the freight move entirely by rail between the Middle West and Eastern destinations,[4] or that the division of the rate which the rail carriers could obtain on through rail-and-water business was so low as to render the traffic unprofitable to the railroad lines.[5] The

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[1] Lake Line Application under Panama Canal Act, 33 I. C. C. 700, 714–715, 1915.

[2] Lake and Rail Cancellations, 42, I. C. C. 513, 1917.

[3] Bay State Milling Co. *v.* Transit Corporation, 43 I. C. C. 338, 346, 1917.

[4] Lake and Rail Rate Cancellations, *sup. cit.*

[5] Lake and Rail Rate Cancellations, 38 I. C. C. 201, 1916; Canada Atlantic Transit Co., 42 I. C. C. 369, 1916.

Interstate Commerce Commission was able, however, to prevent a general withdrawal of facilities for through shipment by rail and water by exercising its authority over rates, and neither the Lake commerce nor the ship tonnage upon the Lakes, seems, between 1915 and 1918, to have declined.

Summary

Examination of the Commission's decisions under the Panama Canal Act of 1912 shows that it has felt free to recognize diversity of conditions in different sections of the country and to permit the continuance of railroad control over competing water lines in certain instances where the evidence of public interest was clear, while forbidding it in others. Meanwhile, rates, schedules, and practices of the water carriers are required to be filed with the Commission wherever continuance of railroad control is authorized, and the Commission exercises the same control over these schedules that it exercises over railroad rates. Cases have, on the whole, especially in later years, been few, and the effects of the legislation moderate.

Physical Connection Between Rail and Water Carriers

Great as the public interest has been in preventing the direct suppression of water competition through control by rail carriers, there is reason to believe that the power which the Canal Act gave the Interstate Commerce Commission to establish through routes by rail and water and to compel physical connection between rail and water routes may, in the long run, prove at least equally important. The law upon the latter of these points has been applied in several instances, of which two deserve special mention.

Indiana Transportation Co. v. Grand Rapids, etc.

In Indiana Transportation Company *v.* Grand Rapids, Holland, and Chicago Railway,[1] a boat line which operated between Chicago and Saugatuck, on Lake Michigan, sought to compel an electric railway to join with it in constructing and maintaining a physical connection with Saugatuck. The main line of the electric railway ran from Grand Rapids, Michigan, to Holland, Michigan, where it connected with a second boat line to Chicago. The railway reached Saugatuck with a branch, and could have made this, as well as Holland, a terminal for the receipt and delivery of Lake freight, but the branch line was in poor condition, the railroad had no spare money for reconstruction, and the new route promised to be more expensive to operate than the old. The Interstate Commerce Commission, on these facts, refused to order a physical connection at Sangatuck to be established.

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[1] 39 I. C. C. 757, 1916.

New York v. New York Central

In State of New York *v.* New York Central Railroad Company,[1] the Interstate Commerce Commission reached a contrary conclusion to that in the Indiana case, upon a different set of facts. This was a case in which the State of New York complained that the New York Central Railroad refused to provide rolling stock or to furnish a transportation service between the terminal of the Erie Canal near Buffalo and the tracks of the New York Central in that city.

There was, it appeared, continuous track connection between the Erie Canal basin terminal and Buffalo, partly over New York Central rails and partly over rails owned by the complainant, but the state owned no locomotives or cars and could not economically own and operate them under the circumstances. Relief was sought from the New York Public Service Commission, Second District, but without success, and the Interstate Commerce Commission was therefore asked to require the railroad to render the service essential to an interchange of freight between railroad and canal. Plainly the case was important, because it involved the relations between a railroad and one of three major waterway routes for inland transportation. Plainly also the interests of the railroad and of the waterway were different. The New York Public Utility Commission argued that the public interest was involved. The rail carrier objected that a favorable order would divert to the canal much traffic then moving by railroad, including traffic to and from industries located upon the New York Central itself, and that the railroad would be compelled to perform switching movements at relatively small charges in lieu of enjoying remunerative line hauls.

With these conflicting views before it, the Commission held: (1) that it might require an installation of physical connection between a rail carrier's line and a dock; (2) that it might determine which carrier should build; (3) that it might prescribe the terms and conditions upon which the connecting tracks should be operated, and fix the sum which should be paid to or by either carrier in connection with either construction or operation; and (4) that it was in the public interest that defendant should perform the operating services which the state prayed the Commission to require.[1]

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[1] 95 I. C. C. 119, 1924.

This ruling represented a striking victory for the Erie Barge Canal, although it did not alter the fundamental difficulties which the canal has to overcome.

Control and Division of Through Rates

The matter of through rates presents a second set of instances where a water line may be hampered in competing with a rail line by the refusal of rail carriers to make proper arrangements for the successive and continuous movement of goods. This means: (a) through rates; (b) a proper division of charges between coöperating carriers. Unless both are present, the water carrier will be hampered in doing business and may eventually fail. This is not true of the rail or other land carrier. The railroad is self-sufficient; there are, on the other hand, no major currents of inland traffic in the United States which are served entirely by water, so the water line must coöperate or starve.

Through Rates Essential to the Development of Water Service

The reasons why through rates are essential to the successful development of water, and especially of river, traffic in the United States were concisely set forth by the Mississippi-Warrior Service in 1923. These reasons were explained under three heads, as follows:

> "First.—There were no facilities left on any river for doing a local business. Industries on these rivers had been systematically developed to use rail transportation to the virtual exclusion of the river. Shipment by water entailed an additional cost over shipment by rail from these river bank city industries.
>
> "Second.—Every important watercourse had been paralleled by one or more rail lines, and lateral railroads which formerly fed the river trunk lines had been merged with the competing railroads and could not be relied upon to adjust their local rates so as to act as feeders to the barges.
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> "Third.—Most of the important rail rate structures had been devised to comprise great blanket areas of origin or destination in which rates to and from interior points one hundred or more miles from the river were slightly if any higher than the rates to the river cities. Local rates operating from river points over

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[1] The Commission's order in the Barge Canal Case was sustained in United States *v.* New York Central R. R. Co., Sup. Ct. 47 Rep. 130, 1926.

> rail lines reaching laterally from the river cities into these blanket areas were built up sharply on mileage and no series of proportional rates which a barge line could afford to make would enable the public in these cities and towns in interior blanket areas to get any substantial benefit from the savings of water transportation."[1]

The conditions explained in the three preceding paragraphs are most clearly evident along the rivers and canals of the country and less so along the Great Lakes, but they have some significance in all parts of the country.

Reasons for Reluctance of Rail Carriers

Rail carriers, upon the other hand, are slow to respond to the request of the water lines for an extensive system of through rates and routing. It is probable that this reluctance is, in part, evidence of a wish to restrain the growth of inland water transportation. In addition to this general motive, however, rail carriers sometimes find it more expensive to transfer freight to water than to rail connections, and not infrequently the delivery of freight to a connecting water carrier deprives the rail carrier of revenue that it would ultimately receive if the shipment in question rested upon the rails.

This is obviously true when the rail carrier is able to carry a shipment to destination over its own rails, but it may also be the case in less obvious situations. Thus, the Chicago, Burlington, and Quincy and connecting carriers proposed, in 1924, to restrict the application of proportional joint rates on grain and grain products from Missouri River cities to Cairo, Illinois, for beyond, to shipments moving beyond Cairo *via* rail lines. This action would have implied the collection of local railroad rates to Cairo on grain there delivered to barges on the Mississippi River.[2] Similarly, the southern and northern Alabama railroads proposed to charge local rates on pig iron from Sheffield to Florence, Alabama, on the Tennessee River, when the movement beyond Florence was by water, although they were willing to quote through rates when the movement beyond Florence was by rail.[3]

In each instance the carrier which handled the inbound movement to Cairo or to Florence, as the case might be, hoped as partial recompense for a low inbound rate to participate in a subsequent outbound haul. It could not expect participation in the carriage of freight that moved out of Cairo or Florence by water, and was unwilling to quote low inbound rates without an inducement of this sort.

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[1] United States War Department *v.* Abilene and Southern Railway, 77 I. C. C. 377, 324-325, 1923.

[2] Grain and Grain Products from Missouri River Points to Cairo, Illinois, When for Beyond, 91 I. C. C. 365, 1924.

[3] Pig Iron between Florence and Sheffield, Alabama, When for Beyond, 89 I. C. C. 324, 1924.

Application of the Mississippi-Warrior Service

A thorough discussion of joint rail and water rates in the United States and of their division between rail and water carriers was precipitated, in 1923, by complaint of the government-operated barge line upon the Mississippi and Warrior Rivers. To this complaint we have already referred.

It appeared, in 1923, that rail carriers had entered into joint arrangements with the barge lines for the carriage of through freight between certain destinations; the government desired, however, to multiply and extend these arrangements and to secure a more favorable basis for divisions. There was no disposition on the part of the rail carriers to refuse through rates. Not only would this have been impossible, in view of the authority of the Interstate Commerce Commission, but the railroads of the country were in the hands of the federal government when the Mississippi-Warrior Service was inaugurated, and the United States Railroad Administration was not likely to be swayed by narrow competitive considerations. Yet it was by no means easy, in spite of an agreement upon underlying principles, to agree upon the extent to which through rail-and-barge and rail-barge-and-rail rates might properly be introduced, and to determine the terms according to which revenue upon through movements should be divided.

Rules Governing the Installation of Through Rates

The petition of the Mississippi-Warrior Service contemplated, in 1923, an extremely general establishment of through rates and routes. The request was country-wide in its scope and embraced thousands of proposed adjustments. It is generally impossible for an administrative body to deal with a blanket petition of this sort. The Interstate Commerce Commission did, however, lay down two rules:

1. No rail-and-barge route should be established where the short-line rail distance *via* the port of interchange between the interior point and the point of origin or destination exceeded by more than

one-third the short-line rail distance over the most direct route. A through route of this type was objectionable because the rail-and-water haul was unduly circuitous as compared with the direct route by rail.

2. No rail-and-barge route should be established where the short-line rail distance between the interior point and the point of interchange exceeded two-thirds of the short-line rail distance between the interior point and the point of origin or destination. If the rail haul to the point of interchange did constitute more than two-thirds of the entire haul, then the presumption was that the cost of transfer between rail and barge would offset the lower expense of water transportation. To use the Commission's illustration: a haul from New York to Cairo by rail and thence by barge to St. Louis, or a haul from San Francisco to Vicksburg and thence by barge to Memphis, might not be unduly circuitous, but there would be little, if any, saving in rail haul, and not enough barge haul to compensate for the transfer expense.

Division of Rates. Arguments of the Railroad Administration

The essential principles laid down by the Railroad Administration with respect to the division of rates between rail and river lines were as follows:

1. In dividing the revenue on rail and water shipments, the rail lines should receive the same revenue as they would receive if the traffic moved by rail *via* the same gateway.

2. The expense of transfer of freight, over and above that which would occur as between rail carriers, was to be assumed by the water line.[1]

These principles, when carried into effect, were expected to make it a matter of indifference to the railroad whether it interchanged traffic with the barge line or with another railroad carrier. Incidentally, they also had the effect of placing upon the water lines the entire burden of any differential rate which the water carrier saw fit to quote in order to attract traffic, because these differentials did not affect the rail carrier's division up to the gateway in the event that the traffic moved beyond by rail. In practice, the barge rate or rail-and-barge rate was made 80 per cent of the all-rail rate between points of origin and destination. This 20-per-cent reduction, therefore, fell entirely upon the water lines even when traffic moved over joint rail-and-water routes.

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[1] United States War Department *v.* Abilene and Southern Ry. Co., 77 I. C.C. 317, 325–326, 1923; *ibid.*, 83 I. C.C. 742, 1923; *ibid.*, 92 I. C. C. 528, 1924; *ibid.*, 100 I. C.C. 491, 1925; Corona Coal Co. *v.* Secretary of War, 69 I. C. C. 389, 1922.

Opposing Contentions of the Mississippi River Barge Lines

The barge lines replied:

1. That the phrase "expense of transfer, over and above that which would occur as between rail carriers," was an unknown quantity, incapable of exact statement, and subject to individual interpretation at each junction, between every two carriers, and on every different kind of traffic.

2. That the proposal to allow the rail carrier the same revenue on traffic interchanged with a water line as it would receive on traffic interchanged with a rail line at the same gateway did not insure equitable divisions. This was because the point at which rail and water lines came together might not be one through which the railroad was anxious to move freight, either in connection with a steamship or with another railroad line.

This point, referred to in the original case, was clearly illustrated in a continuation of the proceedings in 1924,[1] when divisions of the rates on sugar were, among other divisions, in controversy. Sugar is refined both at New York and at New Orleans, and moves from either point to Chicago and to the Northwest. Carriers on and along the Mississippi River are interested in the development of northbound traffic, but the rail lines north of Cairo and St. Louis look to the East rather than to the South, and are inclined to demand divisions adjusted in order to discourage rather than to encourage sugar traffic which reaches them from the South either by water or by rail.

Again, carriers in the Southeast have adopted the rule that when a rail carrier has a route of its own between two given points, one of which is local to its line, it will not participate with another rail carrier in joint rates between these points, except upon receipt of a division equal to its local rate between the local point and the junction with the other carrier.

Still again, at New Orleans, certain lines from the Southwest insist upon abnormally high percentages in order that traffic may be diverted to interior Louisiana points which they prefer as junctions to New Orleans.

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[1] United States War Department, *v.* Abilene and Southern Ry. Co., 92 I. C. C. 528 924.

Instances of these sorts easily lead the student into highly technical rate controversies, but without following them to this point they enable us to understand why the barge line was dissatisfied, in 1923, with a principle that on first statement seemed most fair.

Principles Approved by the Interstate Commerce Commission

This phase of the discussion may now be concluded by a summary of the Commission's decision in the Mississippi-Warrior case. Briefly stated, the Commission's conclusion was that:

> "1. The problem is to determine the *fair share* which each participating carrier should receive of the joint rates which have been established.
>
> "2. As a basic principle, it is fair that the rail lines should receive the same revenue as they would receive if the traffic moved all rail by the same gateway; but this principle is subject to qualifications.
>
> "3. The rail lines are not fairly entitled to the same divisions as they would receive all rail where those divisions have not been largely determined by the relative amount and cost of the service rendered, but in substantial part by considerations extraneous to the service, such as protection of the long haul, diversion of the traffic to other gateways, etc.
>
> "4. In determining the fair divisions of the rail lines, two tests may properly be applied: First, the general level at the gateway of divisions of joint all-rail rates upon which traffic moves in reasonable volume . . . .; and second, the results derived from the application of a rate prorate basis, using as factors the first-class rail rate between the port of interchange and the interior point and the first-class barge rate between the port of interchange and the port of origin or destination." [1]

The Commission meant by a rate prorate basis a division of the through rail-and-water rate which allotted to each carrier the same proportion of the joint through rate that its first-class rate to the point of interchange bore to the sum of the first-class local rates of the two participating carriers from point of origin of the shipment to the interchange point and from the interchange point to final destination of the goods. The other phrases in the Commission's conclusions need not be further discussed.

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[1] United States War Department *v.* Abilene and Southern Ry. Co., 77 I. C. C. 317, 358, 1923.

General Reflections Upon the Organization of Inland Waterway Control

The intimate relations between rail and water transportation in the United States determine the form taken by machinery of regulation. There is, of course, an argument which may be urged to justify the erection of a separate board for the regulation of inland waterways, or reliance upon the Shipping Board for this same purpose in lieu of the present practice of relying upon the Interstate Commerce Commission for most inland water regulation. The argument is, briefly, that inland navigation should be controlled by men who are free to appreciate its utmost possibilities and who are not restrained by close associations with rail lines. Shipping men generally do not like to surrender their competitive liberties for a system of stable, balanced transportation which emphasizes equality as against cheapness, and they do not wish to see the expansion of water services limited in the interest of other forms of transportation. This point of view is strongly represented in the intercoastal trade, and something may be said for it upon the Great Lakes.

Reasons for Concentrating the Authority to Regulate in a Single Body

The facts support very strongly, nevertheless, the present policy of vesting broad control in the Interstate Commerce Commission over rail and water transportation. It is evident, for one thing, that the only kind of an organization that can give inland waterways protection is one that exercises authority over rail carrriers. The reasoning which leads to this conclusion is elementary and compelling. It may be true that intercoastal carriers can hold their own against rail competition, and Lake carriers may do it also, but river and canal carriers cannot, and even Lake transportation lines are handicapped when railroads deny them reasonable cooperation. A railroad commission is the best agency for accomplishing this purpose of the law.

The other reason for placing control of inland waterways in the hands of the Interstate Commerce Commission is that rate adjustments over the water lines have the effect of admitting certain cities into desirable markets and of keeping others out, thus creating problems which we have discussed under the head of local discrimination, and they affect the ability of rail carriers to earn a fair return. It is inconceivable that there should be two different policies at one and the same time in the United States with respect to these two matters, and if one policy is to be applied to two closely related means of transport, then one agency should administer it. Hence it becomes necessary for the government organization that regulates transportation rates by rail to determine also what rates shall be applied by inland water routes. It is probably unfortunate that the Interstate Commerce Commission does not, in this country, have authority over port-to-port movements upon the Mississippi River and the Great Lakes, since these are essentially part of the general current of inland movement; but even without this, there is a reasonable degree of concentration of responsibility and unity of control. There is no serious dissatisfaction with the Commission's policy, and no likelihood of an immediate change in the statutes regulating our inland waterways.

REFERENCES

Huebner, Grover G., "Extent of Regulation of Ocean and Inland Water Transportation by the Federal Government." *The Annals of the American Academy*, September, 1914, p. 17.

CHAPTER XXXIV

STATUTORY CONTROL OF MOTOR-VEHICLE COMMON CARRIERS IN THE UNITED STATES

Regulation of Automobile Traffic

The regulation of motor-vehicles is still experimental, uncertain, and highly detailed. This chapter will, therefore, be brief, and will concern itself more with questions of types of control, problems of jurisdiction, and proposed legislation, than with an enumeration and analysis of the clauses of existing law.

Among the specific matters dealt with by local regulation at the present time are, besides speed, weight, and size of cars, the control of air brakes, number, color and position of lights, gongs and whistles, fenders, the location of gasoline tanks, the strength of chassis frames, limitations on body dimensions, emergency doors, and regulations governing priority at intersections, hand signals, and parking.

There is little occasion for dispute regarding the powers of governing bodies where the safety of the traveling public is concerned, nor is there any great difference of opinion with respect to the desirability of this sort of public regulation of motor-vehicle transportation.[1]

Variety of Local Requirements

The most immediate practical difficulty connected with public control of the safety of motor traffic is found in the variety of regulation in different jurisdictions. This may be illustrated by a summary of a few of the rules regarding buses in force in different states.

Weight. Louisiana restricts the gross weight of motor-vehicles to 15,000 pounds. In Colorado the limit is 16,000 pounds on four wheels; in Alabama it is 20,000 pounds; and in other states the limit ranges from 18,000 to 30,000 pounds. Sometimes the maximum limit of weight is expressed in a single gross figure, but frequently the law sets a maximum per axle, a maximum per inch width of tire, and a total maximum for the car. The permissible weight varies in some states with the thickness of the tire as well as with its width; in other states such refinements are neglected.

Size. Most states regulate the width of the motor-vehicle, and many control height and length as well. Limitation of automobile dimensions is an obvious necessity; there is a considerable difference of opinion, however, as to what the limit shall be. Thus Florida and Louisiana prescribes a maximum width of 84 inches; Missouri and North Carolina, 86 inches; Kentucky, Maryland, Nebraska, South Carolina, Texas, and West Virginia, 90 inches; Arkansas and 24 other states, 96 inches, and Rhode Island, 102 inches.

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[1] In Gizzarelli *v.* Presbrey, 117 Atl. 359, 1922, a state law denying aliens the right to operate motor-buses in Rhode Island was sustained as a regulation promoting public safety.

Speed. A common prescription is a maximum speed of 35 miles an hour in the open country, with lesser speeds in more closely settled sections. Kentucky and Kansas, however, permit a speed of 40 miles per hour, and in Nevada the limit is 45 miles. In 18 states the maximum speed permitted passenger cars in the open country is 30 miles per hour or less.

Brakes. In Michigan it must be possible to stop the vehicle in fifty feet from a speed of 20 miles per hour. California requires that the wheels must be capable of being locked at 10 miles. New Jersey merely requires ability to hold the vehicle stationary on a 15-per-cent grade. Rhode Island and Connecticut require the ability to lock the wheels with the vehicle in motion.

Marker lights. Markers indicating the full width of the bus are required in Arkansas, Massachusetts, and Minnesota. Michigan requires three green lights placed horizontally, six inches apart, at both front and rear. North Dakota requires three green lights at the lower right side of the windshield. Connecticut, however, requires the front markers on the destination sign to be of purple, and three inches in diameter.

Warning signals. Gongs, bells, whistles, and sirens are prohibited in various states, while Massachusetts requires an exhaust whistle.

Emergency door. Michigan, New Hampshire, and New Jersey require the door to be in the back. Connecticut requires the emergency door to be at the rear of the left side. The District of Columbia Iowa, Massachusetts, New York, Vermont, and West Virginia permit the door to be placed either on the left side or at the rear.

Grab-handles. Massachusetts requires grab-handles at each receiving door, while New Jersey forbids outside grab-handles. As most bus operators agree with the New Jersey regulation, standard bodies are built without outside grab-handles, the handles being specially applied for Massachusetts orders.[1]

These few illustrations, taken more or less at random from a considerable body of local regulation on the subject of motor-buses, are sufficient to suggest a source of embarrassment to buses which operate in more than one state where the laws of those states conflict, as well as to show the tentative character of safety prescriptions at the present time.

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[1] Horine, Merrill C., "Buses and Laws Affecting Them," *Railway Age*, September 25, 1926, p. 603; Fenner, D. C. and Horine, Merrill C., "Bus and Truck Design Hampered by Laws." *Railway Age.* July 23, 1927, p. 183.

Extent of State Supervision Over Motor-vehicle Common Carriers

On January 1, 1927, 42 out of 48 states and the District of Columbia had laws regulating the business of common carriage by motor-vehicles. In addition, the railroad or public-utility commissions of Alabama, Arkansas, Georgia, and Nebraska had jurisdiction over motor-vehicle common carriers under general common-carrier law, although the commissions of Georgia and Nebraska have attempted little or no control of automotive transportation. Only in Delaware, Florida, and Missouri were automobile common carriers subject to no state regulation. Most of the states which had regulatory laws, vested in a board or commission the power to grant or to withhold certificates of convenience and necessity, the power to fix rates, fares, charges and classifications, to regulate service and safety of operation, and to require the filing of reports. In Illinois, Iowa, Kansas, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Dakota, Texas, and Washington the commission prescribed or supervised the carriers' accounting systems. In California the railroad commission supervised the fiscal affairs of motor-vehicle common carriers. The right to inspect books and, generally, to make rules and regulations, was a common feature of state laws, while less frequently the right to order improvements was specifically reserved.[1]

Benefits of Regulation of Motor Carriers

It is conceded by motor carriers themselves that regulation has been of great benefit to the industry. Mr. Howell, vice-president and general manager of the Motor Transit Company of California, has described conditions in his state before regulation became effective in a way which leaves no doubt as to the importance of regulatory control.

Speaking with respect to the operation of motor carriers in California before the period of regulation, Mr. Howell says:

> "It was a chaotic condition, without responsibility, without

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[1] Motor Vehicle Conference Committee, *State Regulation of Motor-Vehicle Common Carrier Business*, 1927 edition.

inspection, a great menace to the public health and morals and to the pocket book of the community. Anybody who could make the first payment down on a second-hand car would go into the business. The car would break down and the passengers were left stranded wherever they happened to be, and the driver disappeared. If there happened to be a fire and the car burnt up, that was all there was to it. He lost his investment, his first payment on the car, and under the contract the seller had no recourse for any salvage from the fire loss.

"The game got so bad that cigar stores, bootblacks, newsboys, were selling tickets over stage lines, taking a commission of 10, 15, 20 or 30 per cent on the sale, and if the car which was to carry the passenger didn't show, the passenger had no recourse. . . . Some of these people found it was cheaper to have tickets printed and sell them over some fictitious name of a stage line and never make any attempt to find transportation for the passenger, and when he (*sic.*) had collected several hundred dollars or a thousand or more he would close his cubby-hole window and go off with the proceeds, leaving the tickets lying around. . . . The City [of Los Angeles] passed an ordinance finally making it a misdemeanor to sell tickets over any stage line except through a permit of the Board of Public Utilities and the filing of a bond to protect the public against such misuse.

"And it was by different little things day after day that we finally got the carriers down to responsibility and regularity, open fares, published fares, and schedules, and later that spread to the State when the State laws were passed." [1]

The Function of Motor-carrier Regulation

Apart from the prevention of abuses described in the foregoing paragraphs, the function of motor-vehicle regulation is to secure adequate service at reasonable rates for the public and, on the other hand, to protect the carrier against irregular and irresponsible competition.

Recent hearings before the Interstate Commerce Commission have enabled the public to demand that motor carriers be required to apply for certificates of convenience and necessity before they begin to operate, and that they take out full insurance, or give proper bond or other satisfactory evidence of their ability to meet claims which

[1] Motor Bus and Truck Investigation, *sup. cit.*, pp. 1780–1782, testimony Howell.

may legitimately be placed against them. Shippers have also asked that carriers by truck be required to issue a bill of lading or other receipt for goods tendered to them for transportation, and be legally responsible to the holder of such a bill for the safe carriage of goods to destination. There is little complaint of unreasonable or discriminatory rates by either bus or truck. Rail carriers, however, believe that motor carriers should be required to publish their rates and fares and to give reasonable notice of change, and that they should be subject to the same sort of obligation to render adequate service when they undertake to render service that is now enforced in the case of transportation by rail.

Difference Between Motor-buses and Motor-trucks

There is a distinction to be made in regulation between the control of motor-bus lines and that of motor-trucks. Motor-buses usually operate between fixed termini, over regular routes, on regular schedules, and at fixed fares. They are, that is to say, common carriers, very similar to railroads in their methods of operation. They can be subjected to the same type of control which has been successful in the case of railroads without peculiar difficulty. The case is, however, different in the case of motor-trucks.

Arguments Against Public Control of Motor-trucks

The principal arguments against the extension of systematic regulation to the motor freight industry are of two sorts. It is undoubtedly true, for one thing, that the motor truck is still in a period of rapid and somewhat uncertain development. It does not, characteristically, operate over fixed routes, and would be embarrassed if prevented from picking up traffic wherever business could be found. It has no satisfactory information with respect to cost of doing business, and no standardized practice with regard to rates. The variety of service rendered, indeed, and the unexpected character of the demands made upon the motor-truck carrier still make the restriction of trucks to prescribed routes uneconomical, and the formulation of a tariff almost impossible. Truck transportation is, in considerable measure, still emergency service. A machine will break down and an entire plant be closed for repairs. A factory will receive an export order requiring the furnishing of a consignment in time for a specified boat connection at a port. If the necessary parts for the machine, or the goods required to fill the order, can be loaded upon a motor-truck and promptly forwarded, the owner of the plant will be saved expense, or the factory will have gained an order. If the shipper is compelled to seek out a motor carrier authorized to serve the territory in which the break occurs, or if the carrier when found has no tariff covering the movement and a published tariff is required, an expedited and desirable movement will have been prevented.

At the present time, moreover, the difference between different companies with respect to terminal conditions, length of hauls, density of traffic, character of roads traversed, and balance of incoming and outgoing loads is so great that the elaboration of standards is almost impossible.

Private Carriers Make Regulation Difficult

Another fact which makes regulation of the trucking industry difficult is the presence of the private carrier. We have already seen that the percentage of motor-trucks engaged in common-carrier operation probably does not exceed 10 per cent of all trucks, and that the inclusion of contract carriers would not raise the proportion beyond one quarter. It follows that public regulation of the motor freight common carrier is directed to a very small portion of a competitive field. If government requirements become burdensome, business will shift from common to contract carriage, or shippers will buy and use trucks of their own. The traffic will still not be regulated, although some carriers may be.

State Control Over Private Carriers

This leads us to refer to attempts to control the private, or at least the contract, motor carrier. Some control can of course be exercised over the private carrier without serious opposition. Thus private as well as common-carrier transportation agencies must comply with all reasonable safety regulations which local or federal authority may see fit to impose. The law not infrequently, however, goes further than this, and attempts to force private carriers to apply for permits to operate on the same basis as common carriers, or even declares that persons who transport upon the public highways for hire become thereby common carriers and subject to all the responsibilities thereof.

Recent State Laws

There are a number of illustrations of this type of legislation in the recent enactments of the several states. Thus Ohio, for example, declares that transportation for hire of persons or property in motor-propelled vehicles over the streets and highways of the state constitutes the operators of the vehicles common carriers, whether or not these operators intend to dedicate their property to public use.[1]

California defines the term transportation company to include "every corporation or person . . . operating . . . any automobile, jitney bus, auto truck, stage or auto stage used in the business of transportation of persons or property, or as a common carrier, for compensation, over any public highway in this state between fixed termini or over a regular route, and not operating exclusively within the limits of an incorporated city or town or of a city and county," and requires all transportation companies to obtain a certificate of public convenience and necessity from the state railroad commission before beginning operations.[2]

The Utilities Act of the State of Utah defines a "common carrier" to include every automobile corporation engaged in the transportation of persons or property for public service over regular routes between points within the state, and an automobile corporation to include every corporation or person engaged in or transacting business of transporting passengers or freight, merchandise, or other property, for compensation, by means of automobiles or automobile stages on public streets, roads, or highways along established routes within the state. Still other states use language intended to have the same effect as that in the statutes of Ohio, California, and Utah.

Decisions Denying the Right of the State to Force Public Responsibilities Upon the Private Carrier

State courts have differed with respect to the validity of laws like these which seek to compel corporations that have never voluntarily dedicated themselves to public service to assume the peculiar duties and liabilities of the common carrier. The Supreme Court of Utah has said that the state has no power to convert, by mere legislative fiat, a private business into a public utility. A private and a public carrier are to be distinguished on accepted legal principles which the state may not change, and the distinction persists in spite of the declaration of a legislative body.[3] The Supreme Court of Ohio has taken the same view.[4]

[1] 110 Ohio Laws, 211.

[2] Statutes of California, 1919, chap. 280.

[3] State *v.* Nelson, 238 Pac. 237, 1925.

[4] Hissen *v.* Guran, 146 N. E. 808, 1925.

Decisions Affirming the Right of the States to Control Private Carriers

On the other hand, the Supreme Court of California has defended the right of a state legislature to subject private automobile carriers to legislative and commission control upon two grounds. The first of these is that the private carrier, like the common carrier, makes use of the public highway. The right to use the highway is regarded as a privilege, which the legislature may grant or withhold at its discretion or which it may grant upon such conditions as it may impose. The second ground is that the private carrier competes with the public one, and both must be equally controlled if the public is to have reasonable rates and service that is adequate, regular, and reliable.[1]

Both of the justifications which the California Supreme Court offers for state control of private services have force, especially when applied, as in California in Frost *v.* Railroad Commission, to compel a private carrier to apply to the state commission for a certificate before it begins to operate. The opinion of the federal Supreme Court is not, however, favorable.

Conclusions of the United States Supreme Court

The conclusions of the Supreme Court of the United States on the subject of the state's relation to private carriers have been expressed in the decisions of Michigan Public Utilities Commission *v.* Duke and of Frost *v.* the Railroad Commission of the State of California.

In Michigan Public Utilities Commission *v.* Duke, the automobile operator was a private carrier by truck, operating forty-seven motor trucks and trailers between Detroit, Michigan, and Toledo, Ohio. Duke had never undertaken to carry generally for the public, and he had never sought or exercised special privileges such as the right of eminent domain. Duke fell, however, under the classification of the Michigan Public Utility Act of 1923, which declared: (1) that no person should engage in the business of transporting persons or property by motor-vehicle for hire upon the public highways of the state over fixed routes or between fixed termini unless he should have obtained from the Michigan Public Utilities Commission a permit to do so; (2) that all persons engaged in the transportation of persons or property for hire by motor-vehicle upon or over the public highways of the state should be common carriers; and, (3) that all common carriers should carry insurance or furnish an indemnity bond for the protection of those for whom they hauled. Duke had taken out no permit and had filed no bond; he asked an injunction to prevent Michigan officials from barring him from the public highway.

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[1] Frost *v.* Railroad Commission, 240 Pac. 26, 1925; Holmes *v.* Railroad Commission, 242 Pac. 486, 1925. See also Reo Bus Lines *v.* Southern Bus Line Co. 272 S. W. 18, 1925, Buck *v.* Kuykendall, 295 Fed. 197, 1924, and other cases cited in this chapter.

We shall return to the Duke case presently because it involved a question of interstate commerce as well as a problem of defining the extent of public control over private carriage in the State of Michigan. The Supreme Court was quite clear, however, apart from any consideration of interstate commerce, that a state could not make a private carrier into a public one by decree, for that, it said, would be taking private property for public use without just compensation, in violation of the due-process-of-law clause of the Fourteenth Amendment to the Constitution of the United States.[1]

The ruling in the Duke case did not answer the argument for state control of private carriers advanced in California and in Kentucky, which rested upon the right of the state to grant or to withhold the use of the public roads from carriers which declined to accept a common-carrier status. Seventeen months later, however, the Supreme Court handed down a second decision in which this contention was carefully considered.

Frost v. Railroad Commission

The case of Frost *v.* the Railroad Commission of the State of California involved the validity of the very California law that we have already summarized. The complainant was a truck line, engaged under a single contract in transporting, for stipulated compensation, citrus fruits over the public highways of the state between fixed termini. The question was as to whether this truck line could be compelled to secure a certificate of public convenience and necessity from the state railroad commission and to submit to a regulation of its rates and fares. The Supreme Court answered the question in the negative, largely, apparently, because it regarded the arguments in its favor as a subterfuge. Doubtless, the Court said, the state might impose conditions upon those who desired to use its roads; but it could not impose every kind of condition, nor any condition at all which required the relinquishment of constitutional rights. Hence the state could not require an individual to assume the responsibilities of a common carrier as the price of the privilege of doing business upon the highway, for this would take property without due process of law. Nor was the apparent bargain a free one. Having regard to form alone, it was, indeed, true that the California Act might be regarded as an offer to the private carrier of a privilege which the state might grant or deny, upon a condition which the carrier was free to accept or to reject. In reality, the carrier was given no choice, except a choice between the rock and the whirlpool—an option to forego a privilege which might be vital to his livelihood or submit to a requirement which might constitute an intolerable burden.[1]

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[1] Michigan Public Utilities Commission *v.* Duke, 45 Sup. Ct. Rep., 191, 1925.

Arguments in Favor of Public Regulation of Private Carriers by Motor-truck

The decision in Frost *v.* Railroad Commission did not deprive the states of all control over private carriers, but it confined them rather narrowly to safety regulations which could be justified under their police power. It may be unfortunate that regulation is so limited, although it must be recognized that control of private truck lines presents problems of great complexity. In railroad service the private carrier usually operates over its own right of way, one at least of its termini is usually upon land which it owns, and the character of the business is such that it offers little competition to other established means of transportation. On the other hand, the private motor freight vehicle operates over the public roads, frequently in direct competition with rail or water service, and conceivably also in competition with motor common carriers. If its rates cannot be controlled, the regulation of other rates becomes difficult, and if it is not obliged to take out certificates of convenience and necessity, the whole theory of a controlled and responsible transportation service as contrasted with a theory of competitive and irresponsible service becomes difficult to apply.

Conflict of State and National Authority

Local safety regulations may be applied to private and common carriers and to vehicles engaged in inter- or intrastate commerce, with only such distinctions as are reasonably appropriate to the different types of vehicles concerned. This well-known principle of constitutional law covers all of the types of regulation described in the early part of this chapter, as well as other instances where the application is perhaps not quite so clear. Such a case was that of Kane *v.* New Jersey, decided in 1916.

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[1] Frost *v.* Railroad Commission, 46 Sup. Ct. Rep., 605, 607, 1926.

Kane v. New Jersey

In Kane *v.* New Jersey,[1] the New Jersey automobile law of 1906, as amended in 1908, was called in question. This Act provided that no person, whether a resident or nonresident of the state, should drive an automobile upon a public highway unless he should have been licensed to do so and the automobile should have been registered under the statute; and also that a nonresident owner should appoint the Secretary of State his attorney, upon whom process might be served "in any action or legal proceeding caused by the operation of his registered motor-vehicle, within this State, against such owner." The statute fixed the driver's license fee and the car registration fee, and directed that the moneys received from fees in excess of the amount required for the maintenance of the Motor Vehicle Department were to be applied to the maintenance of improved highways.

Kane, a resident of New York, was arrested while driving his automobile on the public highways of New Jersey on his way from New York to Pennsylvania. He was duly licensed as a driver both in New York and in New Jersey, but he had not registered his car in New Jersey as the statute required, and he had not filed with the Secretary of State for New Jersey the prescribed instrument appointing that official his attorney.

Kane contended that the statute was invalid as to him, a nonresident, because it violated the Constitution and laws of the United States regulating interstate commerce. But the United States Supreme Court followed an earlier Maryland case which held that "in the absence of national legislation covering the subject a State may rightfully prescribe uniform regulations necessary for public safety and order in respect to the operation upon its highways of all motor-vehicles—those moving in interstate commerce as well as others." Kane's contention was therefore overruled and the New Jersey law sustained.[2]

Concurrent Powers of the States

When state and local rules extend beyond the question of safety, and no distinction is made between state and interstate traffic, another principle may be involved to justify the action of the local authority. This is the principle of "concurrent powers," already referred to in Chapter XXVI. It is admitted that the power of Congress is supreme over interstate automobile as over interstate railroad traffic, yet when the public interest is best conserved by local and diverse enactments rather than by a single, uniform rule, courts will recognize the fact that inaction by Congress is not equivalent to a congressional declaration that no action is desirable, as one might suppose, and they will permit some degree of local control over subjects which Congress might admittedly direct if it felt so inclined.

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[1] 242 U. S. 160, 1916.

[2] Hendrick *v.* Maryland, 235 U. S. 610, 1915.

The problem of state regulation of interstate commerce by automobile includes, therefore, the task of determining what are the subjects in this field which demand, or perhaps permit, of diversity of treatment, as distinguished from those in which a single uniform rule is imperatively demanded. In the one class of cases the states have concurrent powers; in the other they have not. The reader must be referred to treatises upon constitutional law for the general discussion of the "concurrent powers" over interstate commerce which state legislatures possess, but attention will be drawn here to recent cases in which the United States Supreme Court has indicated limits beyond which the states cannot go.

States May Not Refuse a Bus Line Permission to Operate in Interstate Commerce. Michigan Public Utilities Commission v. Duke

We have already referred to the case of Michigan Public Utilities Commission *v.* Duke in discussing the authority of a state to regulate a private carrier. The carrier in this case had three contracts to transport from Detroit, Michigan, to Toledo, Ohio, automobile bodies made at the plants of three manufacturers in Detroit and intended for the use of an automobile manufacturer at Toledo. It will be recalled that the Michigan law imposed three requirements upon all persons engaged in the business of transporting persons or property by motor-vehicle for hire upon the public highways of the state over fixed routes or between fixed termini: (1) that a permit should be obtained from the Michigan Public Utilities Commission; (2) that all such persons should be common carriers and subject to laws, including regulatory laws, applicable to common carriers; and (3) that all common carriers should carry insurance or furnish an indemnity bond for the protection of those for whom they hauled. In considering the relation of those rules to interstate commerce, the United States Supreme Court held that they went beyond the powers of the state government to enforce. "Clearly," said the Court, "these requirements have no relation to public safety or order in the use of motor-vehicles upon the highways, or to the collection of compensation for the use of the highways. The police power does not extend so far." "It is well settled," added the Court in another place in its decision, "that a State has no power to fetter the right to carry on interstate commerce within its borders by the imposition of conditions or regulations which are unnecessary and pass beyond the bounds of what is reasonable and suitable for the proper exercise of its powers in the field that belongs to it." In accordance with these expressions of opinion, an injunction restraining the Michigan Public Utilities Commission from enforcing the state law against Duke was sustained.[1]

It will be observed that the Duke case involved a private carrier and left undetermined the question as to whether a common carrier which desired to engage in interstate transportation could be required to obtain a certificate of convenience and necessity from one or all of the states concerned. This additional point was, however, soon settled.

Buck v. Kuykendall

In Buck *v.* Kuykendall [2] suit was brought by a citizen of the State of Washington, named Buck, who wished to operate an auto stage line over the Pacific highway between Seattle, Washington, and Portland, Oregon, as a common carrier exclusively for through interstate passengers and express. Buck obtained a license from Oregon, but the State of Washington refused to grant him a certificate of convenience and necessity upon the ground that Seattle and Portland were already adequately served by connecting steam and auto lines. The United States Supreme Court said that this refusal was illegal. State regulation might be upheld, even as to interstate commerce, when its purpose was to promote safety upon the highways and conservation in their use; it could not be supported when it attempted only to prevent competition. This second type of control was an obstruction to interstate commerce, not a mere regulation of the manner of use of highways within the state. Still another case, decided the same day, applied the same principle to a motor company that vainly sought a permit from the State of Maryland to do an exclusively interstate business as a common carrier of freight over specified routes.[1]

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[1] Michigan Public Utilities Commission *v.* Duke. 266 U. S. 570, 1925.

[2] 267 U. S. 307, 1925.

Interstate Buses Corporation v. Holyoke Street Railway Company

The only subsequent case in which the United States Supreme Court has had occasion to apply the rule of the Duke and Buck decisions has been that of Interstate Buses Corporation *v.* Holyoke Street Railway Company.[2] This litigation concerned a Massachusetts statute of 1925 which contained the following provision: "No person shall operate a motor-vehicle upon a public way in any city or town for the carriage of passengers for hire so as to afford a means of transportation similar to that afforded by a railway company by indiscriminately receiving and discharging passengers along the route on which the vehicle is operated, or as a business between fixed and regular termini, without first obtaining a license. . . . No person shall operate a motor-vehicle under such license unless he has also obtained from the department of public utilities a certificate that public convenience and necessity require such operation. Anyone operating under a license from local authority and a certificate from the department is declared to be a common carrier and subject to regulation as such."

The Interstate Buses Corporation operated a line of buses between Hartford, Connecticut, and Greenfield, Massachusetts, carrying persons from one state into another, and also those whose journeys began and ended in Massachusetts. It took out, however, no license. When prosecuted for violation of the Massachusetts law, the company declared that the state Act of 1925 was void as an attempted regulation of interstate commerce. The Supreme Court, nevertheless, sustained the law.

At first sight the Interstate Buses case appears to have run counter to the rule in the Duke and Frost cases that a legislature may not compel a private company to accept common-carrier responsibilities, and to that of the Buck case which denied the right of a state to refuse a certificate of public convenience and necessity. Properly interpreted, however, it does not do so. It is to be observed that the complainant in the Interstate Buses case was already a common carrier, and had therefore no standing to contest this feature of the law, and also that the statute was limited in its application to motor-vehicles which, like a railway train, indiscriminately received and discharged passengers along the route on which the vehicle was operated. This definition was in itself a reasonably good description of an offering of public service. The complainant, moreover, had never applied for a certificate and so had never been refused one, nor was there any reason to suppose that the state proposed to impose unreasonable requirements as a condition of issuing a permit or to refuse a certificate upon the ground that the territory in question was fully served. So far as the facts were shown in the Interstate Buses case, they were consistent with the theory that the Massachusetts law was primarily a regulation of local service over the state highways, so administered as not to burden interstate commerce, though necessarily affecting it in some degree.

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[1] Bush Co. *v.* Maloy, 267 U. S. 317, 1925. See, *contra*, Interstate Motor Transit Co. *v.* Kuykendall, 284 Fed. 882, 1922; Liberty Highway Co. *v.* Michigan Public Utilities Commission, 294 Fed. 703, 1923; Buck *v.* Kuykendall, 295 Fed. 197, 1924; Bush *v.* Maloy, 123 Atl. 61, 1923; Northern Pacific Ry. Co. *v.* Schoenfeldt, 213 Pac. 26, 1923.

[2] 47 Sup Ct. Rep. 298, 1927. See also Camas Stage Co. *v.* Kuzer, 209 Pac. 95, 1922.

Recent Decisions of State Courts

In addition to the Supreme Court decisions there have been decisions in the state courts subsequent to the Duke and Buck cases that have interpreted the federal rule in concrete instances. These include the case of Haselton *v.* Interstate Stage Lines,[1] in which the Supreme Court of New Hampshire held that the right of an interstate bus line to carry interstate passengers did not carry with it the right to conduct intrastate business along the line of its interstate route with the same degree of immunity from state regulation that the interstate traffic enjoyed. The state court recognized the possibility that such regulation might constitute a burden upon interstate commerce, but it argued, first, that the facts in the case before it did not suggest that interstate commerce was being burdened, and, second, that the power of the state to regulate intrastate traffic should not, in any event, be limited by inference or implication. It was conceivable that Congress might find constitutional justification for a federal law regulating the intrastate business of interstate carriers, but the state at least possessed concurrent powers and might control until Congress had occupied this field.[2]

This aspect of the subject deserves, and will doubtless receive, further consideration.

In another case decided in Rhode Island in 1925, a common carrier by bus proceeded to operate between Newport, Rhode Island,

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[1] 133 Atl. 451, 1926.

[2] See also Barrows *v.* Farnum's Stage Lines, 150 N. E. 206, 1926.

and Fall River, Massachusetts, without applying for a certificate or permit, in spite of a Rhode Island statute declaring that no person should operate a public-service motor-vehicle transporting passengers without obtaining a certificate from the public utilities commission of the state specifying the route over which the vehicle should operate, the number of passengers it might carry at one time, the service to be furnished, and that public convenience and necessity required its operation over the selected route.[1]

The Supreme Court of Rhode Island held that this carrier could not operate without a state permit. The court recognized that the Commission could not withhold a permit upon the ground that the public was already adequately served, but it was of the opinion that the state law was valid in so far as it authorized the Commission to specify a route, to limit the number of passengers to be carried at one time, and to regulate the service to be rendered. The defendant carrier was enjoined from operating until it had obtained a certificate specifying these things.

This case, like the one in New Hampshire, though on the surface contrary, conforms in reality to the Supreme Court's rule.

Importance of a Well-recognized Division Between Federal and State Authority

It is very desirable to establish clearly and definitely the extent of state jurisdiction over interstate motor-vehicle transportation. A practical example of the type of confusion which may occur when the limits of authority are poorly understood occurred recently, indeed, in connection with trucking business from Indiana cities to points in the neighboring state of Ohio. Ohio requires truckmen carrying freight from other states into Ohio to take out an Ohio permit. Indiana truckmen believe the requirement to be unconstitutional and refuse to comply with it. As a consequence, a member of the Public Service Commission of Indiana complained to the Senate Committee on Interstate Commerce in 1926 that Ohio magistrates arrested and imprisoned Indiana truckmen who crossed the state boundary in giving an interstate service. In a great many instances the driver of the truck was arrested, put in jail without bond, kept overnight, and then, when he was taken before the local magistrate, was discharged with the admonition that he must not come into the State of Ohio again without obtaining a certificate of convenience and necessity. In other cases the truck driver was taken before a magistrate and the case was continued from time to time until it was finally dropped, the driver being permitted to go on his own recognizance. In still other instances there were quarrels without arrest, and proceedings before the local courts that consumed much of the time of the driver and of the motor-truck owners. The situation finally grew so bad that Indiana truckmen refused to carry freight from Indiana into Ohio, while at the same time, under a different interpretation of the law, Ohio truckmen were permitted to enter Indiana without molestation.[1] Disputes of this type may readily lead to serious trouble of an altogether unnecessary and gratuitous sort.

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[1] Newport Electric Corporation *v.* Oakley, 129 Atl. 613, 1925. Cf. Cannon Ball Transit Co. *v.* Public Utilities Commission, 149 N. E. 713, 1925.

Analogy Between Present Conditions and Those Which Existed in 1886

The apparent conflict between state and federal authority in the field of automobile regulation recalls the situation in 1886 after the Wabash decision had limited the authority of the states to control interstate commerce by rail and before the federal Congress had entered the field with the Act of 1887. In some respects conditions are even worse than they were in 1886, because transportation companies have been educated since then with respect to their constitutional rights by a long experience of regulation under the interstate commerce law, and are quick to take advantage of defects in the regulating statutes.

Evasions of State Law in Rhode Island

A representative of the United Electric Railways Company of Rhode Island testified, in 1926, to the success with which motor-bus lines were evading local regulation in that state by assuming the guise of interstate carriers in traffic between the Rhode Island towns of Woonsocket, near the Massachusetts border, and Providence, in the southern part of the state.

> "Anyone who sees fit—and there are such—," said the witness, "goes to the center of Woonsocket with their busses and stops directly across the street from the . . . street railway terminal, and sign their busses, 'Woonsocket-Providence.' They load their busses just ahead of the cars and trains right there, and then run one and one-tenth miles to that border [of Massa-

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[1] United States Congress, Senate, Hearings before the Committee on Interstate Commerce on S. 1734, 1926, pp. 42–43, testimony Clyde H. Jones.

> chusetts], go over that border 250 feet where there is a cemetery and a freight yard, and nothing else, turn around and come straight down that highway to Providence with their passengers, and it cannot be stopped because under the law, as interpreted, it is interstate if the wheels of these vehicles go over the soil of another State."

A different procedure seems to have been equally effective upon the Connecticut side of Rhode Island. The same witness says:

> "From Providence to Westerly, at the Connecticut border is some 38 miles over a brand new State highway. Over this route a lady named Mrs. Mooney invested in four busses and sought permission from the Public Utilities Commission of Rhode Island for an intrastate certificate of public convenience and necessity. She obtained it. She filed her bonds for the protection of her passengers and created a business between those two points and the villages *en route*. After she had created that business, one of these gentlemen said, 'Well, how can we get in on that?' Very easily. There is a bridge which is located at the center of the business district of Westerly, which divides Rhode Island from Connecticut, and the middle line of the bridge is the boundary line. The bus of this man is taken to that bridge and is stopped on the Connecticut side of the bridge with the front wheels right at the border line. The man leaves the bus and goes ahead 150 feet where her bus is running on a scheduled time approved by the commission, and to which she holds, and he says, 'Bus for Providence, express, right here, leaves at once.' The people go down to this express bus and he carries the people from Westerly to Providence, and he is doing an interstate business with no interstate passengers. And you cannot stop it."[1]

While the experience in Rhode Island may be unusual because of the limited area of that state and the consequent nearness of its cities to the boundary lines, it is evident that a good deal of traffic is bound to escape control if the states cannot take and the federal government has not taken steps to regulate it. This is true in spite of the doctrine in the Haselton case which denies to interstate carriers the right to conduct intrastate business without a state permit, and the fact will persist even after evasions of the Rhode Island type have been abolished. The only remedy is the passage of a federal statute, the consideration of which has, fortunately, begun.[1]

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[1] United States Congress, Senate, Hearings before the Committee on Interstate Commerce on S. 1734, 1926, pp. 90–91, testimony Williams.

Proposals for the Federal Regulation of Motor-vehicles Engaged in Interstate Commerce

In 1925, after the decisions in Buck *v.* Kuykendall and in Bush *v.* Maryland, the executive committee of the National Association of Railroad and Public Utilities Commissions authorized the president of that association to appoint a special committee to draft a bill for the federal regulation of motor-vehicle common carriers. This committee was appointed, a bill was prepared, discussed at the annual convention of Railroad and Utilities Commissioners, and eventually introduced into Congress by Senator Cummins in December, 1925. Hearings were held upon the bill in March, 1926, but the proposed legislation was never considered in the Senate.

Carriers to Which the Senate Bill Applies

Senate bill 1734 endeavored to establish a system of regulation for motor carriers engaged in transportation as common carriers comparable to the system in force in many states for the control of intrastate motor transportation. When the bill was first drawn, the view prevailed in the committee that it was desirable to provide for the regulation of all motor-vehicles engaged in transportation for hire.[2] We have already seen that this type of comprehensive control had previously been attempted in state laws with unsatisfactory results. Influenced, doubtless, by this experience, the authors of the bill restricted it to common carriers, which they classified into two groups: (1) Class A motor carriers, embracing all motor carriers engaged in transportation as common carriers in interstate commerce between fixed termini or over a regular route; and (2) Class B motor carriers, embracing all other motor carriers engaged as common carriers in interstate commerce.

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[1] At least one federal court has granted an injunction to prevent an abuse of the kind described in the text (*Railway Age*, Motor Transport Section, April 23, 1927, p. 1298).

[2] There are no comprehensive statistics showing the proportion of interstate to total motor-vehicle traffic. Mr. McDonald, however, for the United States Bureau of Public Roads, has estimated the percentages of interstate business in specified states on the basis of the registration of cars observed in Bureau surveys as follows:

Passenger traffic—percentage interstate, Connecticut 21 per cent; Pennsylvania, 14 per cent; Ohio, 14 per cent; Maine, 21 per cent.

Freight traffic—percentage interstate, Connecticut 10 per cent; Pennsylvania, 4.4 per cent; Ohio, 4.7 per cent; Maine, 2.1 per cent.

This method of estimate yields, however, only approximate results. Mr. McDonald estimates, in general, that interstate common-carrier truck traffic does not exceed 2 per cent of all truck traffic (Motor Bus and Truck Investigation, *sup. cit.*, pp. 4990, 4986).

Machinery of Control

The proposed legislation relied in the main upon existing state railroad or public utilities commissions for its administration. Applicants for certificates were expected to apply to the local commissions in their own states, and these commissions were expressly empowered to administer the federal law. Each commission or board might grant a certificate authorizing the applicant to engage in interstate commerce in so far as its own jurisdiction was concerned, or several boards or commissions might organize a joint board from their own membership to hear such applications. Complaints regarding rates were to be handled by joint boards made up of representatives of each of the commissions concerned. Appeal lay in all cases to the Interstate Commerce Commission, with the stipulation, however, that the hearing before the federal commission should be upon the record made before the board or commission from which the appeal was taken. The Interstate Commerce Commission, besides hearing appeals, was charged with the duty of prescribing a system of accounts for motor common carriers, and was expected to exercise local jurisdiction where a state commission refused or was unable to serve.

Certificates of Convenience and Necessity

Common carriers in either Class A or Class B were to be compelled to obtain a certificate from an appropriate board or commission declaring that public convenience and necessity required the service which they proposed to give. The bill specified the form of this application for each class separately, provided for hearings, and directed the certificate-granting authority to give reasonable consideration, among other pertinent matters, to the likelihood of the proposed service being adequate, permanent, and continuous, and to the effect which such service might have upon any other transportation agency, the continued operation of which was important to the communities which the latter served.

The board or commission appealed to might grant or refuse the application, and in issuing a certificate it might prescribe such reasonable terms and conditions as to weight of load, number of passengers, continuity of operation, adequate service, the exclusion of pick-up and delivery points on routes between termini, or within defined localities or districts, and such other matters as in its judgment the public convenience and necessity required. The bill directed the applicant in particular to furnish a bond or insurance policy sufficient to cover any judgment arising out of death or injury to passengers or loss or damage to property connected with the operation of the motor carrier, unless the board or commission to which application was made was satisfied that the financial responsibility of the carrier afforded assurance of the payment of damages for which it might become liable.

Regulation of Rates, Accounts, and Operation

Finally, the bill laid down the following regulations with respect to rates, accounts, and operation:

1. All rates, fares, and charges should be stated in money and should be just, reasonable, and not unduly discriminatory;
2. Rates, fares, and charges should be printed, filed, posted, and adhered to;
3. No change in rates, fares, and charges should be made except after thirty days' notice or on special permission of the Interstate Commerce Commission;
4. Complaints alleging that rates were unreasonable or discriminatory might be made to the appropriate board created by the act, and the board was authorized to institute an investigation and to determine the controversy. The board might suspend proposed rates, upon complaint, for a period not exceeding 120 days;
5. The Interstate Commerce Commission should promulgate a system of accounts to be used by all motor carriers;
6. In general, the boards or commissions which granted certificates were empowered to supervise and regulate every motor carrier operating under such certificate; to require reasonably continuous and adequate service at just, reasonable, and not unduly discriminatory rates; and to supervise and regulate such motor carriers in all matters affecting the relationship between the motor carriers and the travelling and shipping public. They were given authority, in addition, to prescribe rules and regulations in conformity with the act.
7. Violation of the provisions of the act was punishable by fine or imprisonment or both. In addition, a board might revoke a certificate which it had granted, or it might apply to a district court for the enforcement of an order that it had made.

Why Coöperation of State and Federal Regulatory Commissions Was Proposed

The bill for federal regulation of motor carriers just described marked a distinct advance in the development of motor-vehicle regulation. Its most interesting features were those connected with the machinery of control. It is probably safe to say that the individuals who proposed to use the state commissions to administer a federal act were influenced by the following considerations:

1. The heavy burden of work already borne by the Interstate Commerce Commission;

2. The local character of many of the problems connected with motor-vehicle regulation;

3. The record of coöperation between federal and state regulatory authorities in railroad matters, especially in connection with the issue of certificates of convenience and necessity and of permits for the abandonment of railroad lines;

4. The desire to preserve the influence of the state railroad and utility commissioners—an influence which has been greatly lessened in recent years by the extension of the power of the Interstate Commerce Commission over intrastate railroad transportation. The Senate bill for the regulation of interstate motor transportation was framed by representatives of the State Railroad and Utility Commissioners of the country, and not unnaturally reflected their views regarding the importance of maintaining authoritative local bodies.

Disadvantages of Such a Plan

There are, nevertheless, reasons to doubt whether a combination of state and federal organizations can be made into an effective organ of federal control. These reasons are partly legal. State commissions owe their existence to state laws. Their powers are defined by and they are responsible to state legislatures. It is doubtful if the federal government can add to these powers, or, indeed, establish any formal extra-constitutional relations with state bodies except in the way of friendly conference and exchange of views. The joint work which has been done in the way of coöperation in railroad regulation by federal and state commissions does not really go beyond such an informal relationship.

The other reasons are administrative or political. The quality of the personnel of state commissions varies greatly from state to state. The tenure of office of state commissioners is short, and their previous training in judicial work is frequently slight. Moreover, the state official owes his first allegiance to his state and depends for security and advancement upon his ability to please a local clientele. He has local knowledge, and may therefore be more effective in some types of problems than a distant commissioner at Washington, but he is not likely to fit easily into a machine for regulation of national scope. For this purpose a series of regional commissions, responsible to a single central commission, and selected according to a uniform plan for the sole purpose of administering laws relating to interstate commerce, is probably better than a heterogeneous body of state and federal officials.

Other Criticisms

In addition to criticisms of the Senate bill of 1926 based upon its attempt to make use of state commissions for the administration of a federal law, the proposed legislation was objected to because it proposed to regulate truck operation, because it required motor vehicles to furnish a bond, because it promised to restrain the development of automobile service in the interest of railroad companies, and because of a number of other real or alleged defects which it is unnecessary to discuss in view of the failure of Congress to enact the measure into law. There is little doubt but that the national legislature will soon again concern itself with the federal regulation of motor-vehicle transportation, and at that time the details of legislation will be a proper subject for debate.[1]

Proposed New York Tunnel Legislation

Pending action upon S. 1734, the Senate discussed a more limited and local measure vesting in appropriate state bodies the authority to regulate interstate motor transportation through the tunnel under the Hudson River between New York and Jersey City and over the bridge across the Delaware River between Philadelphia, Pennsylvania, and Camden, New Jersey. Tunnel and bridge were expected to be opened in the spring of 1926, and some control of traffic was desirable in order to prevent congestion. The bill here mentioned was introduced into the Senate on April 7, 1926. It was referred to the Committee on Interstate Commerce, reported out on April 21, debated briefly on May 10, and passed. The House referred the measure to its Committee on Interstate and Foreign Commerce, but took no further action.[1] While there was no serious opposition in the Senate, the American Automobile Association opposed the bill on the ground that there was gross discrimination in legislation designed to control operations over a bridge or through a tunnel when competitors were left free to operate by means of ferries, and that the emergency calling for interstate regulation was not local but national, and legislation should be capable of general application.[2]

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[1] See Powell, T. C., "Why Motor Transport Regulation is Needed," *Railway Age*, Motor Transport Section, September 25, 1926, p. 599, for statement of the essentials of a motor-vehicle law from the standpoint of a railroad official.

It is possible that the criticisms of the Automobile Association carried weight in the lower house; whatever the explanation, the measure failed, and it has not since been revived.

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[1] *Congressional Record*, Sixty-ninth Congress, First Session, vol. lxvii, parts 7 and 8, pp. 7008, 7906, 9074–9077, 9247.

[2] *Traffic World*, May 8, 1926, p. 1278. The summary of objections in the text is not intended to be exhaustive. See I. C. C. Docket 18,300, p. 279, testimony C. G Moore.

ing Constructed under Hudson River between New York, N. Y., and Jersey City, N. J., and over Interstate Bridge now being Constructed across Delaware River between Philadelphia, Pa., and Camden, N. J., May 21, 1926." Sixty-ninth Congress, First Session, 1926.

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